University of Sussex

Interim Accounting Earnings and Price Momentum

by

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Declaration

I hereby declare that this thesis has not been, and will not be, submitted in whole or in part to another University for the award of any other degree.

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Summary

We know that managers may use their discretion by structuring transactions that can alter financial reports in order to persuade stockholders in their interpretation of the underlying economic performance of the company. The study reported in this thesis examines such earnings discretion in the six monthly interim reports issued by listed firms in the UK, and investigates the relationship between estimates of earnings manipulation and the market pricing of the firm's shares. This is tested by examining whether managers use their discretion to sustain earnings trends in the case of 'winner' firms, i.e. those that are in the upper range of prior returns, and likewise to keep a negative trend in 'loser' firms, those in the lower range of prior returns. Specifically, momentum portfolios are formed based on past six-month returns and tested for differences in future six-month earnings management, as measured by discretionary current accruals in six month interim reporting periods. The results suggest that discretionary current accruals are significantly associated with past returns for winner more than loser firms, and hence that past returns may contribute to the explanation of future earnings management, the behaviour being consistent with appearing either to persist as winners or to turn losers around.

Key Words: *Discretionary accruals, Winner and loser firms, Interim reporting*

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Introduction

1.1 Overview of the thesis

A considerable body of research is concerned with the relationship between accounting earnings and stock returns, and presents important insights into the characteristics of financial accounting. Nichols and Wahlen (2004) show that the profit available to the shareholders of a firm represents an accounting measure of the change in the book value of the firm's equity during an accounting period. At the same time, the stock price change of a firm over the same period (plus any dividends paid) captures the change in the firm's market value. Clearly, the market value of a firm is related to its 'bottom line' performance and it is important to know the nature of this relationship. In simple terms, a theoretical link between accounting earnings and stock prices assumes that current earnings provide information that can be used to predict earnings in future periods, which in turn informs stockholder expectations about dividends in future periods, and hence assists in determining the stock price as the present value of expected future dividends.[1]

This thesis examines whether half-yearly (interim) current accruals are used in the same way as annual current accruals to increase or decrease giving opportunities to

[1] Nichols and Wahlen (2004) show the relation between earnings changes and stock returns and their result replicates the result of research of Ball and Brown (1968). Also, they investigate this relationship and its connection with the relationship between changes in cash flows from operations and stock returns.

managers to continue returns patterns (upwards in winner firms or downwards in loser firms). Belkaoui (2004, pp. 179) defines 'accrual' as …

> *"… the accounting process of recognising noncash events and circumstances as they occur, specifically, accrual entails recognizing revenues and related increases in assets and expenses and related increase in liabilities for amounts expected to be received or paid, usually in cash, in the future…"*

In the literature review discussed in this dissertation that deals with accruals, the term accrual is used to denote changes in working capital, whether or not these are accruals in the strict accounting sense. Many variables can affect the level of accruals. For instance, working capital drives changes in accruals which in turn tend to rise with sales. Therefore, a high level of accruals may be a reflection of past growth in sales. Some studies show that investors extrapolate trends from the recent past too far into the future (see Shleifer, 2000). If this happens investors may overestimate future sales growth when pricing firms with high accruals, and future returns are likely to turn out to be disappointing.

The components that form accruals include information about operating performance and the market reacts to this information. Changes in inventories, account receivables, and account payables are examples of accruals components that are commonly employed by security analysts as indicators of business conditions. Such changes may suggest difficulties in generating sales. For example, increases in accounts payables may imply problems with paying suppliers, which may be due to inadequate sales revenues or because of credit difficulties. There is evidence the market may respond with a delay to the information in an earnings number (Chan, Jegadeesh and Lakonishok ,

1996) and part of the response may be due to the components included in accruals. Also, components of accruals may be employed as early indicators of deterioration in operating performance.

For example, when sales growth slows managers may face pressures (manage) to inflate earnings in order to meet analyst forecasts, so leading to an increase in accruals. These forces may be all the stronger as investors and analysts maintain overstated expectations about future profitability growth. Inventory may start to accumulate as sales smooth, and receivable may raise as competitive pressures force firms to extend better credit terms, so accruals increase (Chen et al. (2006)).

In this thesis our focus is on interim working capital accruals, that including current accruals, such as changes in inventories, account receivables, and account payables. Our definition of 'discretionary' current accruals is the change in non-cash current assets minus the change in operating current liabilities. This definition is used because it is argued that managers have more control over current accruals in the short-term. In this respect this study follows Jones (1991) and Teoh et al. (1998b). In the literature, discretionary accruals are often used as an indicator of earnings management because evidence suggests that discretionary accruals have a relationship with future returns[2] and their association with stock price returns over the current and following interim periods.

Dechow (1994) is the seminal study on how accruals can improve the ability of earnings to reflect firm performance, and how this is reflected in stock returns. Typically, managers have discretion over the recognition of accruals, an opportunity that can be

[2] See Jones (1991), Guenther (1994), Subramanyam (1996), and Erickson and Wang (1999) for earnings management proxies and controls.

utilised by managers for their private information or to manage earnings. In the latter case, Dechow's research design models this accrual manipulation as the unexpected component of earnings, which is seen to incrementally explain stock returns in the same period. Sloan (1996) also examines whether movements in stock price reflect information about future earnings contained in accruals, while his results show that accruals are not fully reflected in stock prices, nevertheless accruals are shown to give rise to arbitrage profits, created by selling the shares of high accrual firms, buying those of low accrual firms and holding them for a year.[3] Subsequently, Xie (2001) examines whether the price of stock reasonably reflects the earnings implications of discretionary accruals one year ahead, and finds that the market overestimates their persistence, and overprices such abnormal accruals. In an extension to the work of Sloan (1996), and using a similar method, Richardson et al. (2006) show that the less reliable components of accruals have a low persistence in predicting future earnings[4].

This ongoing inquiry into the relationship between accruals and stock returns has been central to a large body of research on earnings management. In general, however, there are questions to be asked about the power of the discretionary accruals models used in the type of estimation mentioned above. Kothari et al. (2005) compare several methods of measuring discretionary accruals, based on stratified-random samples and over multi-year horizons. The results reveal that performance-matched discretionary accrual measures improve the reliability of inferences from earnings management research.

[3] Related evidence was also offered in a paper by Dechow, Sloan and Sweeney (1995).

[4] Sloan (1996) documents accrual reliability in the context of earnings persistence and further research by Richardson, et al. (2005) develop this idea by disaggregating accruals on the basis of the balance sheet items. They group accruals according to their reliability levels as follows: changes in working capital accruals, changes in non-current operating accruals and changes in financial accruals.

Kang et al. (2010) report that the power of discretionary accruals that are aggregated across periods in predicting returns is robust not only with regard to the accruals model used to estimate discretionary accruals, but also to the choice of sample period, the measurements of returns, business conditions and proxies of risk. However, the ability of accrual models to spot simulated and actual earnings management is still questioned elsewhere. For instance, Stubben (2010)[5] suggests that revenue-based accrual models are less biased, better specified, and more powerful than commonly used accrual models. Livant and Santicchia (2012) argue that if extreme quarterly accruals contain valuable information about future earnings and stock return reversals, then users of financial statements should focus on quarterly cash flows and accruals to obtain an early warning that future earnings may reverse[6].

The present study builds on this prior work regarding the contribution of accruals to explaining future returns, and attempts to investigate the relationship by linking earnings management in interim financial reporting to short-term return momentum in the UK.

1.2 The motivations of the present study

The aim of the present study is to produce a better understanding of how the accruals information provided in reported earnings is interpreted by investors. If investors focus

[5] Stubben's revenue model is similar to existing accrual models (Jones 1991; Dechow et al. 1995), but with three key differences. First, he models the receivables accrual, rather than aggregate accruals, as a function of the change in revenues. Second, he models the receivables accrual as a function of the change in reported revenues, rather than the change in cash revenues (Dechow et al. 1995). Third, Stubben uses the changing in annual receivables as a linear function of two components of the change in annual revenues: first three quarters, and change in fourth-quarter revenues. Note that Jegadeesh and Livnat (2005) study the stock price relationship with revenue more directly. They find that stock with a large revenue surprise produces a significant abnormal return in the post-announcement period.

[6] Livant and Santicchia (2012) show firms with extremely high (low) current quarterly accruals have significant and negative (positive) abnormal returns through the subsequent four quarters.

on reported bottom-line income, they may be temporarily deceived. This suggests that it may be necessary to limit managers' discretion with regard to accounting, since investors apparently cannot resolve the valuation effect of earnings reported under current reporting standards.

In the paper by Dechow (1994) mentioned briefly above, accruals improve the ability of earnings to measure firm performance; over short measurement intervals, earnings have a high association with stock returns. The link to earnings management is even more evident in Dechow et al. (1995), who show that accounting accruals are above the average for firms subject to performance actions by the U.S. Securities and Exchange Commission[7]. Although there is no direct evidence to show that managers of firms with high accruals intentionally manipulate results, the very fact of a high level of discretionary accruals suggests an undefined measure of earnings manipulation. Elsewhere, Subramanyam (1996) demonstrates how the discretionary net accrual (the abnormal component) is priced by the stock market, with discretionary accruals not only associated with contemporaneous stock prices but also with future earnings. This result is consistent with the pricing of opportunistic earnings manipulation by an efficient market. Further, Subramanyam suggests that the pricing of discretionary accruals arises because managers use their discretion to improve the ability of earnings to show fundamental value (also called intrinsic value; the value of a security that is intrinsic to, or contained in, the security itself).

[7] Dechow et al. (1995) work on the most extreme deciles of each performance measure. Their samples have more extreme performance than that occurring in specific earnings management studies. They confirm that the performance induced misspecifications are not limited to the extreme deciles.

Investors are not necessarily able to interpret signals about fundamental value if they only focus on measures such as return on assets. The research described above suggests that analysts may also use information on accruals and the components such as changes in receivables, inventories and accounts payables, as indicators of business conditions. These accruals are driven by changes in working capital, which in turn tend to rise with sales. Nevertheless, whilst a high level of accruals may be a reflection of strong past growth in sales, a high level of accruals accompanied by a high stock price may be built on an overoptimistic estimate of future growth rates. At the same time, although the components of accruals include information about operating performance, the market seems to react slowly to this information. This study attempts to provide evidence about the association between returns in the short term and discretionary accruals in this context, taking sales growth into account, together with unexpected earnings which can contain signals about earnings quality as well as sales growth.[8]

1.3 Objectives of the thesis

This study has two objectives. The first objective is to investigate whether analysis based on half-yearly accrual data leads to similar results as analysis based on annual current accruals[9]. As the literature review demonstrates, most studies explain annual accruals without considering whether interim accruals contain useful information about future stock returns reversals. Most industry analysts are interested to revise earnings forecasts after interim earnings are published. Similarly, if investment and credit

[8] Some researchers such as Bernard and Thomas (1989) and Jegadeesh and Livnat (2006) examine stock price responses to earnings surprises. They use standardized unexpected earnings (SUE) as their measure of earnings surprise.

managers have information on a half-yearly basis, they are unlikely to wait until the end of the financial year for the next annual earnings announcement to make a change in their portfolios or make decisions about their outstanding credit positions.

The second objective is to establish whether managers in winner firms continue returns patterns through upwards management of accruals, and whether managers of loser firms manage earnings downwards in the buy-and-hold period, thus seeking to cause a reversal in earnings after a huge decline. To test these assumptions, returns portfolios are sorted into winner and loser firms based on their past six months' stock returns. The results support the hypothesis that firms' managers engage in such behaviour.

This study looks at variables such as sales growth and economic variables to see whether they are correlated to returns momentum performance. Finally, the study explores whether returns momentum is explained by earnings management. The analysis is based on UK interim reported data from 2004 to 2009. Financial firms are excluded from this study. The empirical tests employ data from the Thomson One Banker database.

1.4 Structure of the thesis

This thesis is subdivided into eight chapters. This chapter has provided an introduction to accounting earnings and stock returns resulting from the market.

Chapter 2 presents a review of the main papers focused on interim accounting earnings, earnings management and the methods that managers use to manage earnings. The chapter includes a discussion of the idea that managers are motivated to maintain growth in earnings because their rewards are usually tied to their firm's profits. In

addition, the use of different kinds of accruals (discretionary and non-discretionary) and the role of accruals components such as inventory are explained. The third section of Chapter 2 deals with stock returns, one of the most important variables of this study. The theory behind price momentum is presented and related research is discussed. The relationship between income stocks and growth stocks is also analysed in Chapter 2. Section 2.4 is concerned with the relationship between earnings management and stock returns.

Chapter 3 describes interim accounting reports. Also Chapter 3 illustrates the published accounting standards with respect to interim reports and shows how interim financial statements should be presented.

The methodologies used in the empirical part of this study are presented in Chapter 4. The chapter explains how discretionary accruals, sales growth and standard unexpected earnings explain future returns. In addition, it discusses earnings management in winner and loser firms. The first section of Chapter 4 focuses on the role of investors with regard to expected returns and possible earnings manipulation as a part of earnings management. Section 4.2 provides the definitions of winner and loser firms used in this study. The incentives of winner firms to create positive accruals are another important focus of Chapter 4. The related research shows that there are incentives for managers of winner firms to engage in earnings manipulation to get better results. The motivations for loser firms to make negative accruals and the actions of distressed firms are also discussed in this section. The final section of Chapter 4 considers the predictability of returns.

Data selection and treatment processes are the focus of Chapter 5. The main issue is how accounting data from Worldscope and market data from the Datastream database are treated. Variable definitions are presented in this chapter. This study considers six-

monthly data as interim data and divides each year into two parts: first semester and second semester. The main basic statistical characteristics of the sample are presented.

The regression models for testing hypotheses are presented in Chapter 6. The main regression tests the association between past returns and other independent variables such as current returns, sales growth and discretionary accruals. The regression results are provided in Chapter 7. Finally, Chapter 8 contains the conclusion and also provides suggestions for future research.

1.5 Summary

This chapter presents the main research topics relating to earnings management through accruals in winner and loser firms. Also, the chapter presents different motivations for the study. The two objectives of the study are to determine whether interim accruals contain useful information about future earnings and stock returns and to examine whether managers of winner and loser firms tend to manage earnings upwards or downward.

Chapter 2

Accrual accounting, earnings management, and stock returns

2.1 Introduction

The responsibility for publishing external accounting information lies with the managers of firms. Regulations direct managers to prepare financial statements that are relevant and reliable. However, informational asymmetry between managers and the users of these financial statements provides managers with the discretion to prepare financial information in accordance with perceived advantages. A considerable body of research has investigated the connection between managers' incentives and accounting choices. Tests of managerial incentives using accruals commenced in 1985 in Healy's research, which demonstrates how managers may manipulate corporate earnings in order to increase their bonuses.

Much of the research into managerial incentives assumes that earnings management is driven by its impact on stock returns. Earlier studies find that managers may manage earnings to smooth income in order to make the firm appear a less risky investment (Trueman and Titman, 1988), or to meet the expectations of analysts (Kasznik, 1999). This prior research demonstrates that both income-increasing and income-decreasing earnings management may be used strategically either to hide poor performance or to defer earnings to future periods. The stock price consequences of such behaviour may motivate management to take opportunities to manipulate earnings particularly in the short term, and this is linked to several share-related anomalies such as price behaviour around equity issuances. In this thesis,

an attempt is made to link earnings management to the returns momentum that may be observed in the market.

2.2 Accrual accounting

Most research methods that attempt to find evidence of earnings management rely on the computation of accounting accruals separated into two parts: the expected accruals (defined as nondiscretionary) and the unexpected accruals (defined as discretionary). Discretionary accruals are estimated and statistical tests are run to determine if accruals differ from zero, the normal or expected value.

The role of current and non-current accruals in the relation between stock returns and earnings for intervals of one to four years were examined by Loftus and Sin (1997). They argue that current and non-current accruals have different roles because the former turn over more frequently whilst the latter have permanent differences. Their results suggest that both accruals are important over short intervals.

There is no agreement in the literature about models or methods of estimating discretionary accruals, or guidelines about the estimation of models in order to improve the power of the tests. Some early authors developed recommendations and they are found in Dechow et al. (1995) and Guay et al. (1996) with US data, and in Young (1999) using data from the UK. These attempts concentrate on the Healy (1985), DeAngelo (1986), and the Jones (1991) models. Other studies find a relationship between accruals and cash flows. Shivakumar (1996) added cash-flow variables to the Jones model. These studies improve the traditional Jones model, but the fundamental methodology is unchanged. This chapter tries to explain the literature by reviewing how discretionary

accrual models are typically estimated and develops a framework that may be used to test for earnings management.

The researcher divides accruals into normal accruals and the residuals which are left by the model of expected accruals. The expected model will capture most of the volatility and will not concentrate on a small amount of variation in the discretionary accruals. A weak model will not consider variation in total accruals and will lose most of it in the discretionary section of accruals. Most of accruals models (see DeAngelo (1986), Healy (1985) and Jones (1991)) are developed to show whether management manipulates earnings during a specific period; they assume certain behaviour of non-discretionary accruals, and estimate the discretionary accruals as the error obtained from the these models. DeAngelo considers as last year's value of total accruals as the nondiscretionary component of this years. Healy defines nondiscretionary accruals as the average of past total accruals. Thus the predictive power of accruals to determine earnings management is linked to the standard error of the discretionary component of accruals. This is the main assumption of this work, and it is tested on a series of accrual models. This chapter first seeks three sources of difference in total accruals: time, exchange effects, and industry classification. These factors have an important role in identification of accruals because accruals are supposed to reflect the economic activity of the firm. Differences in the level of total accruals indicate economic conditions change from year to year. Initial results suggest that these three sources (time, exchange effects, and industry classification) are significant.

2.2.1 The objective of accrual accounting

The objectives of financial reporting and its relation to accrual accounting are laid out by the FASB is in its 'Statement of Financial Accounting Concepts';

> *"The primary focus of financial reporting is information about an enterprise's performance provided by measures of earnings and its components [CON1, para. 43]…Accrual accounting attempts to record the financial effects on an entity of transactions and other events and circumstances that have cash consequences for the entity in the periods in which those transactions, events, and circumstances occur rather than only in the periods in which cash is received or paid by the entity [CON6, para. 139]…Accrual accounting uses accrual, deferral, and allocation procedures whose goal is to relate revenues, expenses, gains, and losses to periods to reflect an entity's performance during a period instead of merely listing its cash receipts and outlays. Thus, recognition of revenues, expenses, gains, and losses and the related increments or decrements in assets and liabilities – including matching of costs and revenues, allocation, and amortization – is the essence of using accrual accounting to measure performance of entities [CON6, para. 145]"*

The essential objective of accrual accounting is to inform investors about economic performance during the period of using accounting principles. Related research (e.g., Dechow (1994)) reports that earnings tend to be smoother than cash flow information; earnings present investors with better information about economic performance than cash flows.

2.2.2 Working capital accruals

The role of accruals documented in the research of Dechow (1994), Guay et al. (1996) and Dechow et al. (1998) can be explained as mitigation of operating cash flow noise created from exogenous or manipulative variation in working capital levels. In comparison, operating cash flow is noisier than accounting income because it does not incorporate every period variation in working capital assets such as accounts receivable, inventory, prepayments, and in working capital liabilities such as unearned revenue and accounts payable. This noise causes operating cash flow to be a less efficient contracting variable than accounting earnings. For example, a firm that uses a service close to the end of fiscal year, but carries on from its historical accounts payable payment policy, could delay paying the debt until the following year. The delay is exogenous and manipulative (e.g., managers attempting to show current-year performance measures by timing the cash payments). Delayed payment can increase the firm's year-end cash balance; therefore it will be current-year operating cash flow. The effect of cash flow will be transitory, because the payment is delayed by one period. When payment is made in the following year, operating cash flow is reduced in that year. It means that delays in payment create a transitory increase in accounts payable and increase transitory noise to operating cash flow, which reverses over time.

Accrual accounting attempts to cover this transitory noise from accounting income by expensing the cost of the service when it is used in creating revenue, rather than when it is paid for. Further, accounting earnings seem to be a less noisy variable than cash flow from operations[10]. Working-capital accruals (such as inventory, accounts

[10] Ball and Shivakumar (2006) demonstrate that cash flow effect is transitory: it reverses the following year when the accounts are paid. They illustrate that accrual accounting shields accounting income from this

receivable, and accounts payable) adjust operating cash flow to create an earnings variable. This variable is less noisy for measuring periodic performance and more efficient for contracting with managers and other lenders. According to Dechow (1994) one role of accounting accruals is to create a measure of short-term performance. Her finding shows that earnings are more strongly associated with stock returns than are realized cash flows. Dechow demonstrates that working capital accruals are contemporaneously and negatively correlated with other things such as equality (long term gain and loss in accruals), accruals and cash flows from operations. Cash flows are more negatively correlated serially than earnings, and these are more volatile than earnings. Earnings are more highly correlated with stock returns.

According to Dechow's research, the correlation between earnings and stock return pressurises managers to manage earnings, and this is one of the reasons that this study explorers the impact of this practice on winner and loser firms.

2.2.3 Discretionary and non-discretionary accruals

It is difficult to separate total accruals into discretionary and normal accruals (or nondiscretionary) because motive is unobservable and economic events cause changes in total accruals from year to year. According to the literature two methods are used to estimate these expectation models. The time-series approach estimates the parameters for each firm in the sample selection by using data from periods prior to the periods in

transitory noise, making it a more efficient performance measure. Therefore, they find that compared with contracts based on cash flow, contracts based on accounting income are more efficient because they reduce transitory noise in the payoffs.

question. In contrast, parameters in the cross-sectional models estimate for each period and each firm in the event sample, using data for firms in the same industry.

Dechow et al. (1995) and Guay et al. (1996) contain tests based on the time-series approach. This method could only be used for firms with long series of financial data, for example, Guay et al. (1996) considered 15 years of data in his study. Some researchers separate firms by SIC code and estimate nondiscretionary accruals by using yearly cross-sections of firms (DeFond and Jiambalvo, 1994). In this method, it is assumed that the economic situation will affect the firms in the industry in a similar way.

2.2.4 The role of accrual components

Sloan (1996) raises an important question about accruals, namely, which part of the accruals are considered to drive the results. The study by Thomas and Zhang (2002) suggests that inventory is the main component of accruals driving the accruals anomaly. They also find that the firms which have the highest and lowest extremes of changes in inventory distribution are characterised by higher and lower profitability. Thomas and Zhang (2002) explore which accruals components are responsible for accruals mispricing. They find that inventory change is the component of the accrual measure that is strongly related to next year's abnormal returns. Firms in the lowest deciles of inventory accruals show higher levels of growth and future abnormal returns, while firms with the highest deciles of inventory accruals show lower levels of growth and abnormal returns.

One explanation for mispricing accruals is that investors are unable to incorporate the information that was created by the abnormal component from operating accruals. By

analysing a cross-sectional version of the Jones (1991) model, Xie (2001) finds that both normal and abnormal accruals are mispriced by the market.

The early research conducted by Sloan (1996) shows that discretionary accruals-based investment strategy is able to create 11% size-adjusted abnormal stock returns one year ahead, but a nondiscretionary accruals-based strategy is only able to create a statistically insignificant abnormal stock return of 2.3%. Thus, the market seems to be able to correct the price of firms with normal operating accruals.

The results in Xie (2001) provide confirmation that the information about accruals conveyed at the managers' discretion is given too much emphasis by the market. His ideas are extended by the market's reaction to the information included in abnormal working capital accruals in the earnings announcement date (see DeFond and Park, 2001). DeFond and Park show that the market, on average, does not fully impound the pricing implications of abnormal working capital accruals associated with earnings surprises. They report that there is an asymmetry in the market reaction to the type of news conveyed by companies and abnormal working capital accruals. According to DeFond and Park's findings, firms with good news have higher earnings responses. They show that income-increasing abnormal accruals exaggerate the magnitude of good news earnings surprises therefore they expect the market to infer that the underlying surprise is actually smaller than reported. Also, abnormal accruals have the opposite implications for reported bad news surprises. Income-increasing abnormal accruals destroy the magnitude of bad news earnings surprises and thus should lead the market to infer that the underlying surprise is actually larger than reported. Recent research reveals evidence that accruals information is correctly priced by the market for those firms which disclose

information about accruals in earnings announcements (Louis et al, 2008). This evidence is robust for both discretionary and nondiscretionary accruals components.

2.2.5 Accruals and earnings characteristics

An important aspect of the present study is to focus on accruals and earnings characteristics to produce a better understanding of the impact of accruals mispricing. The main reason behind this focus is that earnings and accruals characteristics have different predictive values for forecasting future returns. These essential characteristics may put pressure on accruals mispricing, or they can explain accruals mispricing.

The abnormal accruals can be driven by unreliable accruals components, with reliability being defined as the level of subjectivity associated with each component. The research shows that more reliable accruals components have higher persistence than less reliable components on earnings (Richardson et al, 2005). Sloan (1996) provides evidence that accruals mispricing is the reason that the market is unable to price the different persistence of earnings components correctly when forecasting future earnings, and he shows that more reliable components of accruals would be less mispriced than less reliable components.

Richardson et al. (2005) disaggregate total accruals into their different components and classify them into reliable versus less reliable categories. These authors provide evidence that the less reliable components are the items having a lower persistence in predicting future earnings. Moreover, it seems that the market's inability to price the lower persistence of the less reliable accruals components correctly, leads to a mispricing of these components. Also, the less reliable accrual component leads to an

abnormal return and this is higher than the one obtained if using the most reliable accrual component.

According to Richardson et al. (2005) investors are unable to price the effect of special items on future earnings correctly. Subsequently, Dechow and Ge (2006) analyse the effect that special items have on accruals mispricing. Dechow and Ge argues that the behaviour of earnings persistence differs between high and low accruals firms. They provide evidence that firms with low accruals are characterised by a reduction in assets due to downsizing, and assets are reduced by asset impairment and it shows that the accruals information is associated with the structure of the balance sheet. As a result, firms with low accruals will report temporary items if the reported earnings causes their earnings persistence to decrease.

Firms with high accruals, especially firms characterised by large positive accruals are more likely to be growing but, according to accounting conservatism, the future benefits of such events are not accounted for in the balance sheet, while their costs are directly expensed. As a consequence, these firms are more likely to report transitory negative cash flows that are mitigated by accruals and improve earnings persistence.
Empirical evidence regarding this issue is documented in prior studies. In regards to accrual anomaly, Xie (2001) shows that the market overestimates the persistence of discretionary accruals and thus overprices them. Other researchers such as DeFond and Park (2001) find that the earnings response coefficient (ERC) is higher or lower when discretionary accruals show the magnitude of a positive earnings surprise. DeFond and Park suggests that the market partially adjusts for the possibility of accruals management on the earnings announcement date. Other researchers Baber et al. (2006) confirm the DeFond and Park results and show that the ability of market participants to detect

earnings management is improved when firms elect to provide a balance sheet and cash flow disclosures at earnings announcement.

Overall, the evidence shows that accruals reliability is one of the factors affecting accruals mispricing. Thus in the present study, accruals are used instead of operating accruals.

2.2.6 Management of accruals and accrual reversals

Accruals are created when the expenses and revenues that build income are not completely cash based. In other words, accruals show the amounts that are received as revenue and expenses are incurred but do not convert into cash on the balance sheet and do not show up on the income statement. The net income reports both cash income and accrual income. All firms always have a certain level of accruals as presented in Generally Accepted Accounting Principles (GAAP). Therefore, net income is divided into two parts: Cash income and Total accruals as follows:

Net Income = Cash income + Total Accruals (2.1)

An increase in accruals can accompany an increase in income. Accruals can turn into cash, so they can give investors valuable information about the future cash flow of firms. However, sometimes accruals do not turn into cash therefore, some managers use accruals to hide their inability to generate cash income for shareholders. There is a question here: research is needed into when the use of accruals is ethical and when it is unethical. Total accruals can be measured by the balance sheet method or cash flow

method. The balance sheet method[11] of measuring accruals is captured by equation (2.2) below.

Total Accruals =Δ (Current assets – Cash) – Δ (Current liabilities) - Depreciation (2.2)

The cash flow[12] method for measuring is the equation (2.3);

Total accruals = Earnings before extraordinary items and discontinued operations - Operating cash flow + Depreciation and amortization (2.3)

Managing current accruals suggests itself as a potentially popular technique for managing earnings. Healy (1985) demonstrates that accrual management is less costly and more likely on a multi-period basis than changes in accounting methods as a means of transferring earnings between periods. Also, DeFond and Jiambalvo (1994) point out that working capital accruals are more susceptible to manipulation than non-working capital accruals[13]. This study investigates the links between discretionary working capital accruals and stock returns in the short term.

The accrual process is an important aspect of financial accounting. There is limited research documenting and explaining the properties of accruals in interim periods. This study seeks to contribute to research in this area by documenting some fundamental properties of accounting accruals in the short term and describes their implications for accounting research and practice.

[11] The balance sheet method use changes in various amounts of balance sheet items to measure the accruals component through the net income.

[12] The cash flow method implies operating cash flows to measure the accrual components of net income.

[13] Kreutzfeldt and Wallace (1986) show that accounts receivable, inventory, accounts payable, accrued liabilities and also fixed assets are among the five accounts in which errors are most frequently detected by auditors. They also provide evidence that judgmental errors (e.g., underestimation of bad debt expense) are relatively frequent for these accounts. They find such judgmental 'errors' are consistent with manipulation.

Allen et al (2011) provide evidence that extreme accruals lead to a disproportionately high frequency of extreme reversals and reversals can impact earnings in the future. As an example, they demonstrate that extreme positive inventory accruals are followed by a high frequency and magnitude of subsequent inventory write-downs. Also, they show that the popularity of extreme accrual reversals explains a number of results from prior research. They show a negative relationship between accruals and future stock returns which are attributable to accrual reversals frequency. In addition they show that extreme accruals are associated with systematic reversals indicating that accountants and auditors are unsuccessful at identifying the systematic errors in extreme accruals.

2.3 Earnings management

It is hard to detect the machinations of earnings management from the financial statements provided by firms because management has become very adept at it. Early research on earnings management is concerned with the detection of changes in accounting methods because that is usually easily observable (see Watts, 1998). Other research focuses on accruals, showing that earnings management goes unnoticed by the market (Healy and Wahlen, 1999).

According to the assumptions of this thesis investors are misled by earnings management as they are unable to incorporate the quality of earnings into stock returns. A reason is that managers do not disclose information that is necessary to determine the quality of accounting earnings. According to the research by Louis and Robinson (2005), when accrual information is not disclosed, investors misprice earnings at the time of the

earnings announcement and only partially correct them at the end of financial year when accounts are filed with the Securities and Exchange Commission (SEC).

Hirshleifer and Teoh (2003) suggest that investors pay insufficient attention to accruals information, and are interested in understanding and following the process when accruals information is disclosed. Another principal assumption for testing the hypothesis is that managers of winner and loser firms have incentives to maintain returns in spite of changes in the fundamentals. The managers of winner firms have incentives to hide poor performance because their reputation is tied to the earnings of the firm. DeGeorge et al. (1999) show that managers are interested in increasing reported earnings according to the market's expectations. Managers of loser firms have incentives to continue the decline in order to report higher earnings in the future. Some of these incentives are driven by the management's wealth exposure to the stock price. Healy (1985) demonstrates that after a period where earnings are depressed, managers have incentives to select income-decreasing discretionary accruals to increase future reported earnings and bonuses. This study is further extended by Chance, Kumar, and Todd, (2000), who show that options strike prices get reset after periods of bad performance. Other incentives are provided by the pressures they face in meeting earnings expectations. Abarbanell and Lehavy (2003) provide evidence that the sensitivity of a firm's stock price to earnings news, as measured by outstanding stock recommendations, affects its motivations to manage earnings. They find that firms rated 'sell' are more frequently engaging in extreme income-decreasing earnings management, indicating that they have incentives to engage in earnings decline.

2.3.1 Definition of earnings management and methods

It is difficult to discuss and analyse earnings management partly because there is no single definition of earnings management. Earlier studies find an association between stock returns and accruals over long returns intervals. The empirical evidence indicates that accruals have information content.

Schipper (1989) demonstrates that opportunities for earnings management in the reporting system do not eliminate the usefulness of accounting earnings for valuing stocks, which is advantageous for investors. In addition, earnings management can have positive or negative aspects and it seems that researchers tend to focus on earnings management that is advantageous to managers. For instance, earnings management is defined by Schipper as:

> *"Disclosure management in the sense of a purposeful intervention in the external financial reporting process, with the extent of obtaining some private gain (as opposed to merely facilitating the neutral operation of the process)"*

Earnings management can occur at any part of the disclosure process and in several ways. In addition, it can be accomplished by timing investments or financing decisions to alter reported earnings. Under this definition, the benefits of earnings management come from its informational aspects. According to this idea, earnings are one of the instruments that might be used to make certain judgments. As opposed to the economic income aspect, the earnings numbers show a true income perspective. According to the income perspective, some numbers, such as economic income, are manipulated, and this can be the result of earnings management. Accounting numbers are produced by accounting rules which measure the true income with errors, where the

benchmark can be used to evaluate the degree of this measurement error to be a true income metric. Thus, the true income perspective shows that earnings which are not managed are a noisy measure, and that managing earnings can change the properties of the noise such as amount bias. Therefore, the change in properties determines the effect of the earnings management, and it can indicate whether it is positive or negative.

The perspective of standard setters for financial reporting shows that standards add value when they enable financial statements to illustrate differences in company's performance in a credible manner. According to this issue, standard setters follow this definition by Healy and Wahlen (1999):

> *'Earnings management occurs when managers use judgment in financial reporting and in structuring economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers*'

Healy and Wahlen (1999) focus on the negative aspects of earnings management. Their definition implies that managers can use many methods to mislead stakeholders about the economic performance of the firm. This definition of earnings management is difficult to operate directly because researchers first need to estimate earnings before demonstrating the effect of earnings management. One of the most important factors is identifying conditions in which the motivations of managers to manage earnings is strong, and then testing patterns of unexpected or discretionary accruals or accounting choices are consistent with motive. These studies raise two critical research design issues. First, they have to consider managers' reporting incentives and second, they have to compute the effects of managers using accounting discretion in unexpected accruals or

accounting proxy choices. The earlier studies examine the first issue and identify the different types of motivations for earnings management.

Healy and Wahlen's definition makes it very difficult for researchers to design a procedure using reported accounting numbers, because the focus is on managerial decision that is not observable. Financial fraud is the only form of earnings management that has a transparent definition because the intention of managers is clear. Dechow and Skinner (2000) explains the ways in which managers can exercise judgment over financial reports, as shown in figure 2.1.

Figure 2.1
The ways in which managers exercise judgement in financial reporting (Dechow and Skinner, 2000)

Conservative accounting	**Neutral earnings**	**Aggressive accounting**	**Fraudulent accounting**
Within GAAP			*Violates GAAP*
Overly aggressive recognition of reserves Overvaluation of acquired in-process R&D in purchase acquisitions	Overstatement of restructuring charges and asset write-offs Earnings that result from a neutral operation of the process	Understatement of the provision for bad debts Drawing down provisions or reserves in an overly aggressive manner	Recording sales before they are realizable Recording fictitious sales Backdating sales invoices Overstating inventory by recording fictitious inventory
Delaying sales Accelerating R& D or advertising expenditures		Postponing R&D or advertising expenditures Accelerating sales	

2.3.2 Motivation of managers to engage in earnings management

An extensive body of academic research in accounting is devoted to earnings management, broadly defined as the opportunistic exercise of managerial discretion to create reported earnings differing from real earnings. This can be produced from a neutral

application of generally accepted accounting principles (e.g., Dechow and Skinner 2000). Ronen and Yaari (2008) classify the definitions of earnings management in to three different colours; white, gray and black[14].

Many researchers focus on the motivation of managers to engage in earnings management, and the detection and quantification of upward earnings management. Ronen and Sadan (1980) focus on income smoothing literature.

In the most highly cited research study on earnings management, Healy (1985) attempts to predict managers' choices of accounting method. He argues that managers try to find ways in which they can manage net income in an attempt to maximise their bonuses according to the firm's compensation plans. He writes that bonus schemes come from a contract between the firm and its managers that set the basis for managerial compensation. Generally speaking, bonuses give a direct linear relationship between managers' conpensations and current reported net income. Healy (1985) demonstrates that the bonuses tend to begin at a minimum amount of net income and either level off at a maximum amount of net income or continue infinitely. He demonstrates accruals can modify the timing of reported earnings. Therefore, discretionary accruals assist managers in transferring earnings between periods.

[14] They explain white as follows: "*earnings management is taking advantage of the flexibility in the choice of accounting treatment to signal the manager's private information on future cash flows*". Many studies such as Ronen and Sadan (1981), Demski, Patell and Wolfson (1984), Suh (1990), Demski (1998), Beneish (2001), Sankar and Subramanyam (2001) follow the white alternative. Grey is defined as follows; "*earnings management is choosing an accounting treatment that is either opportunistic (maximizing the utility of management only) or economically efficient*". Fields, Lys and Vincent (2001) and Scott (2003) follow this alternative. Finally the black alternative demonstrates; "*earnings management is the practice of using tricks to misrepresent or reduce transparency of the financial reports*". Researchers following this definition include Schipper (1989), Healy and Wahlen (1999), Tzur and Yaari (1999), Chtourou, Bédard and Courteau (2001), Miller and Bahnson (2002).

Some items of earnings management are focused on contractual motivation. From this aspect, earnings management helps managers avoid violating the terms of a debt contract. Such violations can be highly costly to managers and could affect their ability to operate the firm. As mentioned before, earnings management gives a manager the flexibility to choose those accounting policies that avoid close proximity to covenant violation.

Another aspect of earnings management is 'political motivations'. Many firms are often in the public eye or subject to governmental inspection; therefore, firms use earnings measurement to reduce reported net income to prevent external bodies from forcing a politically visible firm to lower its profitability. These issues are discussed in the empirical research by Jones (1991).

A kind of earnings motivation that is addressed by many in the accounting literature is tax motivation (e.g. Palmrose et al. 2004; Hennes et al. 2008). Stringent regulations on the calculation of tax on net income mean that firms have few opportunities to apply earnings management to income taxation. So, a firm may change its inventory methods (change from a given method to LIFO) to reduce its reported net income and the taxes calculated on that income. These actions can positively affect stock prices, because investors tend to invest in firms with lower taxes when market prices are rising.

Managers are interested in maintaining growth in earnings because their rewards are usually tied to the firm's profit. In practical terms, the news that a firm falls short of earnings expectations can lead to a drop in its stock price; on the other hand, the market may well reward firms that exceed their expectations. As accruals are the difference between firms accounting earnings and its underlying cash flow, high accruals indicate

that earnings are high relative to cash flows (Sloan, 1996). This relationship is evident in the work of Teoh et al. (1998a) and Degeorge et al. (1999). These authors document the managerial manipulation of earnings and demonstrate how managers amplify earnings at a greater rate than cash flows, for example, increasing accounts receivable through recording sales before their due date or by decreasing current liabilities such as warranty expenses.

The literature suggests that managers have several incentives for engaging in earnings management. Managers want to hide poor performance because their job security and wealth is dependent on the profitability of their firms, and their reputation is tied to earnings (Bergstresser and Philippon, 2006). They find that the holding values of stocks and options are two important factors because the compensation of CEOs is closely tied to them.

In addition, managers seek to increase reported earnings to meet the expectations of the market (Burgstahler and Dichev, 1997). Another study by DeGeorge et al. (1999) shows that CEOs have incentives to meet three thresholds: reporting positive earnings, maintaining recent (positive) performance and matching analysts' forecasts. Abarbnell and Lehavy (2003) show management try to report earnings close or slightly higher than analysts' forecasts.

Use of discretionary accruals to manipulate reported earnings is more pronounced in companies where the CEO's potential compensation is more closely tied to the value of shares and option holdings (Bergstresser and Philippon, 2006). These authors find that during years of high accruals, CEOs exercise large quantities of options and sell large numbers of shares. Bergstresser and Philippon (2006) provide evidence that companies with more 'incentivized' CEOs, whose compensation is more responsive to company stock prices, have higher levels of earnings management. For this reason, CEOs are

aggressive users of discretionary components of earnings to impact their firms' reported performance.

2.3.3 Earnings persistence

Persistence of earnings performance depends on the proportions of the cash and accrual components. According to Sloan's research (1996) into the role of cash flows and accruals in the time-series of earnings' behaviour, the accruals portion of earnings is less persistent than the cash portion of earnings. Accruals in one period lead to lower profitability in the next period when the accruals reverse. Sloan considers information that contains the cash flow component and the accruals component inside earnings, and examines whether investors' expectations of future earnings embodied in share prices reflect this information[15]. The result shows that the accrual and cash flow components of current earnings have different implications for achieving future earnings. Both components help current earnings. Current earnings performance is less likely to persist if it is attributable to the accruals component of earnings, as opposed to the components of cash flow, because accruals are less likely to recur in future periods of earnings. Sloan demonstrates that the persistence of current earnings goes down by the magnitude of the accruals components of earnings. Conversely, it goes up by increases in the magnitude of the cash flow components of earnings[16].

[15] Dechow and Ge (2005) show that the higher persistence of the cash component of earnings is more attributable to net cash distributions to shareholders, and investors can anticipate the lower persistence of the rest cash component of earnings. Lev and Nissem (2006) discuss the accruals anomaly continues to exist and also became even more pervasive.

[16] Francis and Smith (2005) provide evidence that it is very important to understand how the different kind of measures of accounting information are defined in accounting research, because different measures lead to different inferences regarding persistence.

Solan (1996) provides a different view of persistence of current profitability for achieving future profitability[17], and shows that operating accruals, compared with operating cash flow for one-year ahead, are less persistent. Following up on Sloan (1996), Richardson et al. (2005) demonstrate that it is attributable to the lower reliability of the accrual component of earnings. In contrast, Fairfield et al. (2003) and Wu et al. (2010) shows that it is attributable to diminishing marginal returns to new investment. Collins and Hribar, (2000) and Xie (2001) test this finding and extend it to total accruals. This research suggests that profitability is attributable to either operating or non-operating cash flow.

Xie (2001) uses the market pricing model of Jones (1991) (the estimated discreationary accruals model) to test whether stock prices show the earnings implications of accruals. He extends the Sloan (1996) research by using one year ahead earnings implications of accruals, to show that the lack of persistence and the overpricing of accruals are mostly down to abnormal accruals.

The existence of a negative relationship between accruals and future abnormal returns, documented by Sloan (1996) and Thomas and Zang (2002), is mainly due to one specific area of accruals, namely, inventory. These authors find that changes in inventory represent the one component that shows a consistent and significant relationship with future returns. This result for inventory changes is important because in many instances, like inventory acquisitions, there is no direct relationship between the components of accruals and earnings.

Beneish and Vargus (2002) examine the effect of managerial discretion in the persistence of earnings. They test the insider trading by firms' managers. They find that

[17] Solan (1996) investigates whether stock prices reflect information about future earnings contained in the accrual and cash flow components of current earnings. The persistence of earnings performance is shown to depend on the relative magnitudes of the cash and accrual components of earnings. However, stock prices act as if investors fail to identify correctly the different properties of these two components of earnings.

trading is informative about a firms' earnings quality, since managers like to process private information with regard to economic factors associated with the persistence of accounting accruals. The firms' managers create strategic operating designs and they process private information with regard to economic factors to suggest the likelihood that accounting accruals will result in future earnings.[18] If the managers know that higher reported earnings persist and lead directly to higher future stock prices, then they are motivated to purchase their firm's stock. Also, if income increases from the accruals process because managers manipulate their earnings to hide deteriorating firm performance, it is expected that managers will act on the knowledge that accruals are unlikely to persist and sell their firms' stock.

The lower persistence of income increasing accruals can be caused by changes in the firm's economic environment. This means that accruals are less informative approximately one year ahead of earnings and may therefore be useful for managers involved in opportunistic earnings management. It is difficult to distinguish between these two possibilities. Accruals that cause an increase in income because of abnormal insider trading may lead the market to overprice them. Managers of these firms have a better understanding about the reliability of accruals than investors.

Alternatively, the lack of persistence of accruals may not necessarily be due to earnings management. Other researchers argue that lack of persistence of accruals can be created by errors in estimation (Dechow and Dichev, 2002). These authors consider the

[18] For example, if there is an increase in accounts receivables it creates an increase in earnings. An increase in receivables could mean that sales are increasing and also it could point to solid future sales growth (see Beneish and vargus, 2002). However, increasing receivables could mean credit checks or granting easier credit terms that firms take to avoid reporting lower sales growth. Managers know which of these two options causes the increase in the accounts receivable of accrual. Therefore, we expect that managers have special information about the likelihood that income-increasing accruals will give them an advantage in higher future earnings, and similarly that income-decreasing accruals will give them an advantage in lower future earnings.

quality of earnings from the standpoint of the quality of the accruals, and they examine the role of estimation of errors, and present a new measure of the quality of working capital accruals and earnings. According to Dechow and Dichev (2002) one role of accruals is to adjust the recognition of cash flows over time; therefore the adjusted numbers (earnings) are a better measure of firms' performance, even though accruals assume the future cash flow. They also argue that estimation errors and their corrections are noise that can reduce the beneficial role of accruals. Their measure extends to show which working capital accruals drop into operating cash flow realisation. They provide an empirical measure of high quality accruals and define it as residuals omitted.

Hanlon (2005) addressed the difference between financial reporting, taxable earnings and earnings persistence. She investigates the role of book-tax differences (differences of book income and taxable income) in indicating the persistence of earnings, accruals, and cash flows for one-period-ahead earnings. Also she examines whether the level of book-tax differences influences investors' assessments of future earnings persistence. According to her findings, the firm-years with large book-tax differences have earnings that are less persistent than firm-years with small book-tax differences.

Francis and Smith (2005) re-examine the persistence of the accrual and cash components of income, focusing on two features of persistence. The first concerns its time specificity and the second its firm specificity. This research focuses on time specificity. According to Francis and Smith time specificity refers to the persistence when current-period shocks to income translate into next-period income. They argue that the traditional measures of accruals are functions of current - and noncurrent - period transactions. They find that the inclusion of non-current-period transactions leads to a downward (upward) bias on the persistence of accruals. Some researchers argue that

managers manage earnings and do not distort them; thus management smooth earnings to eliminate their natural volatility. Managers engage in earnings smoothing when they increase or decrease discretionary earnings to make up for a decrease or increase in income. Reporting earnings that give the market information about future prospects of their firms can be a good justification for smoothing. When earnings are volatile, stock returns can become volatile and increase the risk of stock losing value and in turn impose a cost on the firm's shareholders. Accruals need to be carefully evaluated bearing in mind the motivations of managers to manage earnings, to assess correctly the overall prospects and profitability of a firm

2.4 Stock returns

Share prices reflect asset value changes at the time that those changes occur, whether those changes imply losses or gains in asset value. With regard to this view, stock prices always reflect the value of stocks. According to research by Fama (1970):

> *"The primary role of the capital market is allocation of ownership of the economy's capital stock. In general terms, the ideal is a market in which prices provide accurate signals for resource allocation: that is, a market in which firms can make production-investment decisions, and investors can choose among the securities that represent ownership of firms' activities under the assumption that security prices at any time 'fully reflect' all available information. A market in which prices always 'fully reflect' available information is called 'efficient'."* (Fama, 1970, pp. 383)

Accounting earnings present some information about firm values to investors. Researchers such as Ball and Brown (1968), Beaver (1968), and Rendleman et al. (1982)

show that earnings surprise are positively related to contemporaneous stock returns. Bernard and Thomas (1990) also find a positive relationship between earnings surprises and stock returns, though they emphasise that investors are likely to under-react to the information contained in earnings. However, investors are affected and there is no doubt that earnings disclosures affect stock prices.

Managers can exercise some discretion in earnings without violating accounting rules. For instance, firms may affect reported earnings by further revenue recognition and they can defer identifying expense for the future. This activity causes a shift in earnings from the current period to a future period. Managers can also change methods of inventory accounting or use different estimating methods such as bad debt expense.

Firms may use discretionary accounting choices to manage earnings disclosures. For example, there is evidence of consistent earnings manipulation by firms that violate debt covenants (DeFond and Jiambalvo, 1994). Therefore, the present study focuses on the relationship between earnings management and stock returns because managing earnings by managers may affect stock returns.

2.4.1 Explanations of price momentum

The price momentum anomaly has been documented extensively in the research literature and it has been implemented in the active money management industry as a base of excess returns for a long period of time. Price momentum refers to distinct anomalies; the intermediate term price momentum is measured over 3-12 months (Jegadeesh and Titman, 1993), and the long-term price reversal is measured over 3-5 years (DeBondt and Thaler, 1985). Jegadeesh and Titman (1993) explain price momentum as follows:

"The stocks with relatively high returns over the past three to twelve months should return to investors above average returns over the next three to twelve months."

The model of price momentum is defined under the assumption that the stock market is not a completely efficient market. Two explanations of this model include: firstly, investors take the results of human behaviour into the account, including a 'herding' mentality and an overreaction to news; secondly investors use a price momentum strategy face an additional risk because higher returns are required to compensate these investors. Jegadeesh and Titman (1993) provide a large number of trading strategies. One of the main results from their study was that by buying past winners and selling past losers, investors achieved above average returns over the period 1956 to 1989. In particular, stocks classified on their prior 6-month performance and held for 6 months, realized an excess return of over 12% per year on average.

According to the above model, current theories attempting to explain the price momentum anomaly are divided into two groups: First, investors take advantage of human behaviour, such as a "herding" mentality and overreaction to news. Second, investors take on additional risk by using a price momentum strategy, therefore, their models must predict higher returns reimburse them for the risk that they assume.

According to the human behavioural explanation there are a number of theories that provide positive intermediate-term and negative long-term autocorrelation in stock returns. Some of the models build on the idea that prices initially overreact to essential news, and then overreacting is continued for a period of time, ultimately correcting in the long run (Daniel et al., 1998). These authors find that overreaction is based on individuals overestimating their ability to interpret financial information.

Overreaction to news is confirmed by public information in the short-term. Losers who continue to have negative earnings news and winners, who continue to have positive earnings news, lead to a positive autocorrelation in stock prices over the intermediate horizon. Over the long-term the overreaction causes prices to become overvalued, thus leading to negative autocorrelation in stock returns.

Initially, according to price momentum theory, firms' investors (i.e. over a period of 1-12 months) do not like to incorporate all the good (or bad) news announced through earnings. So, as good or bad news is announced, this under reaction builds a positive autocorrelation in stock prices over that period. However, over a longer period (3-5 years), investors overreact to good (or bad) news, leading to securities being overpriced and therefore returning to the mean.

Jegadeesh and Titman (1993) find evidence that investors who buy the winner portfolio and sell the loser portfolio based on past 3 - 12 months returns and hold them for 3 - 12 month, create significant positive returns. According to their findings, a portfolio that is formed on the basis of past six month returns create an average cumulative return of 9.5 percent over the next six months. Subsequent research found this anomaly to be robust in several aspects. The researchers test different time-series for price momentum and they find that after an anomaly has been published it seems to be pervasive during the following years and the evidence shows it is independent of which time-series is selected (Jegadeesh and Titman, 2001). This anomaly has been found to be robust across different financial markets. Rowenhorst (1999) shows price momentum is not only a phenomenon in the United States market but also it is found in international markets. Subsequent research finds that momentum persists across different financial markets, and that it cannot be

explained by macroeconomic risks (Griffin and Martin, 2003). This empirical evidence suggests that price momentum is a robust anomaly and is unlikely to be due to data mining.

2.4.2 Income stocks and growth stocks

The terms 'share', 'common stock' and 'stock' are used in this study as interchangeable words to mean an ordinary share (as defined in the dictionary of Accounting and Finance). The theory underlying this concept argues that an owner of a share is entitled to vote in an annual general meeting or an extraordinary meeting, but not guaranteed dividends. The definition of growth stocks below is presented by Butler et al (1997):

> "*Securities that are expected to offer the investor sustained capital growth. Investors and investment managers often distinguish between growth stocks and income stocks. The former are expected to provide capital gains; the latter, high income. The investor will usually expect a growth stock to be an ordinary share in a company whose products are selling well and whose sales are expected to expand, whose capital expenditure on new plant and equipment is high, whose earnings are growing, and whose management is strong, resourceful, and investing in product development and long-term research"* (Butler et al, 1997, pp. 162-163)

Also, Butler et al (1997) define income stocks as follows:

> *"The stocks or shares bought primarily for the steady and relatively high income it can be expected to produce"* (pp. 170)

All definitions of stock show that stock returns are generally used to classify growth and income stocks. In computing share evaluation, the factors of future cash flow include the

dividend stream that is received over the time and the price of a share at the end of the period.

In the single period model, it is assumed that investors hold shares during a specific period and sell the shares at the end of the same period. The elements of the required returns on equity invested in the shares K can be classified as follows: According to the single period model, the required rate of return on equity has two components: dividend yield and capital gain that are defined as growth in stock price. The earnings of firms can be distributed to shareholders; however they can be retained partly, or entirely, to fund future operations. In general, such firms present lower free cash flow and pay lower cash dividends. Nevertheless, firms with high growth rates and extensive demand for capital investment normally tend to pay less cash dividends.

Stock is usually valued by high aggregated information on the future internal performance of the firms, external factors such as the future level of demand, the behaviour of other firms (especially in the same sector) and the macroeconomic environment. Hence, capital gains can demonstrate future growth accurately.

2.4.3 Accruals and stock returns

The empirical question of whether the net effect of accruals is to improve or reduce the power of earnings to measure firm' performance is examined in this thesis. The main assumption is that stock prices precisely reflect the economic performance of the firm. Some early research focuses on the effects of the information content of accruals on stock prices. Ball and Brown (1968) investigate the relationship between the magnitude of change in unexpected income and the associated stock price adjustment. They provide evidence that the association between security returns and earnings is stronger than the association between

returns and operating cash flow. Accruals arise from differences between cash flow and earnings; this concept suggests that accruals increase the power of accounting income to reflect firm performance. Researchers such as Wilson (1987), Livant and Zarowin(1990) demonstrate that accruals and cash flow components have information content. Dechow (1994) provides evidence that accruals improve the ability of earnings to reflect firms' performances; in particular the accruals are important in performing this role. Dechow's results show that earnings have a stronger association with stock return than net cash flows or cash from operations over the short term (e.g, quarterly) .

Barth et al. (2001) extend Dechow's (1994) ideas by demonstrating the accruals components. They show different information in relation between future cash flow and aggregate earnings. Dechow states that stock price reflects the value of future cash flow by disaggregating accruals into larger components such as inventory, accounts receivables and other accruals; hence stock price has the ability to predict returns. Besides, stocks price cannot *fully* reflect information in accruals and cash flows about future earnings. Therefore, firms with high or low grades of accruals may face positive and negative future abnormal returns, while stock returns act as the accruals anomaly.

Researchers use a number of different methods to provide evidence of the relevance of accruals regarding relations between stock returns and earnings. Dechow (1994) shows the association between stock returns and earnings by considering the association that is between stock return and cash flows from operations. She chooses a sample of firms that are listed in the United States and compares the association between quarters one and four in each years. She concludes that accruals have a substantial role to improve the association between returns and earnings, specifically when quarterly data is considered.

Dechow tests the associations between returns and earnings arising from firms' operations and uses quintile samples ranked by the magnitude of current and non-current accruals. Loftus and Sin (1997) extend Dechow's finding about the role of accruals by comparing the association between stock return and earnings and cash flow from operations. Loftus and Sin use a sample of firms listed on the Australian Stock Exchange (ASX). They find that current accruals show short term timing differences. For example, they show differences between the cost of sold inventory and payments to suppliers during an accounting period.

However, Dechow (1994) emphasizes the role of total accruals, current accruals, and noncurrent accruals with due regard to the relation between stock returns and earnings for a sample of firms listed on the New York Stock Exchange or the United States Stock. This researcher compares regressions of stock returns on each of earnings and cash flows from operations. The result shows that cash flows from operations have less explanatory power than earnings. Also, she states:

> "*accruals are performing a useful role in mitigating timing and matching problems in cash flows"* and "*management manipulation of accruals is of second-order importance"* (Dechow, 1994, pp. 26, 28)[4]

According to Dechow the R-squared of the earnings' regression is higher for longer measurement intervals. She argues that there are some differences between the role of current and noncurrent accruals. By comparing the R-squared of the cash flows from operations and by considering three groups of quintiles based on the magnitude of total, current, and non-current accruals, Dechow concludes as follows: *"The improvement in the association between earnings and stock returns is driven by current accruals"* (pp. 7, 33, 35).

According to Xie (2001), abnormal accruals, which are defined as accruals not raised from the sales of the firm's assets, are affected by lack of persistence and overpricing. In addition, abnormal accruals are used by managers as a significant way to impose their judgement on the financial statement. Thoms and Zhang (2002) find that the negative relations between accruals and future abnormal returns documented by Sloan (1996) were mainly due to one component of accruals, namely inventory.

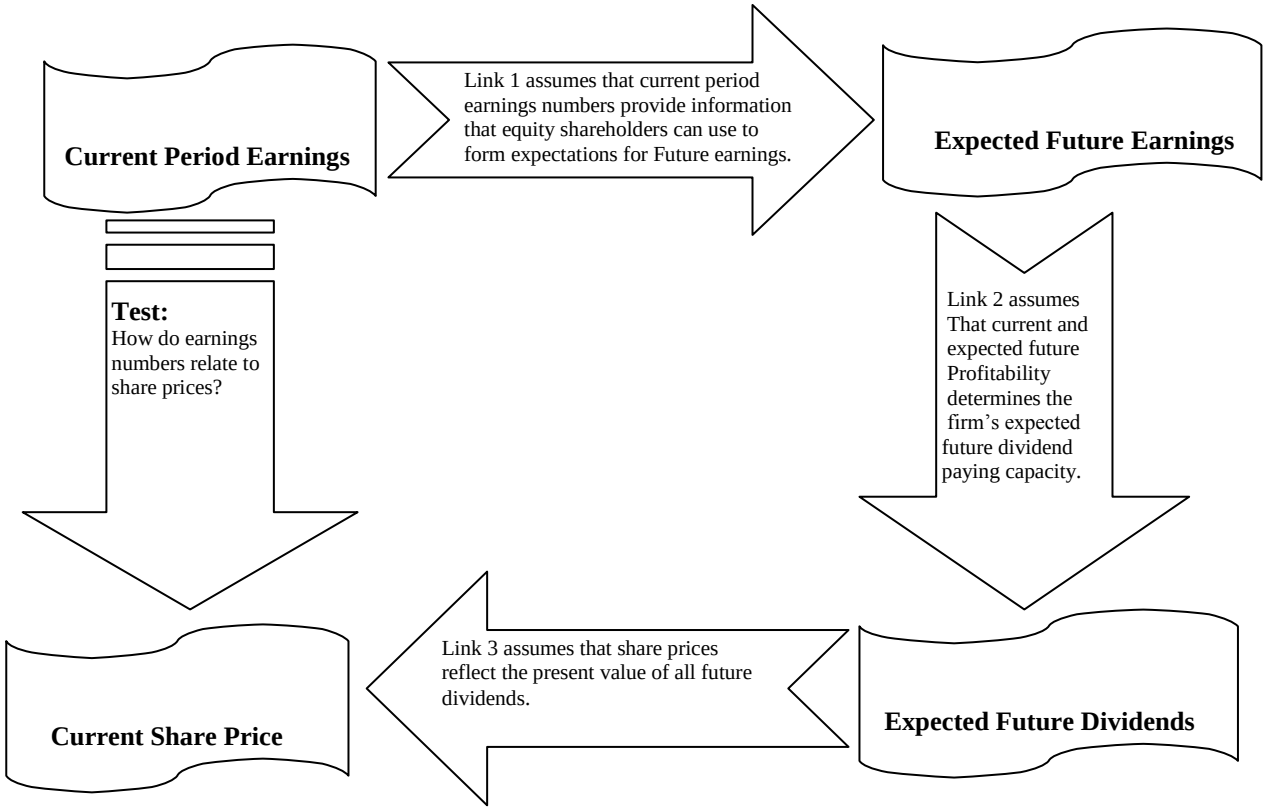
2.4.4 Earnings and stock returns

Many users employ earnings as an important measure because earnings are used as a summary measure of a firm performance. For example, they are used in executive compensation plans, in debt agreements and by investors and creditors. Information asymmetries between management and other parties make demands for an internally generated measure of firm performance that will be reported over finite intervals (Dechow, 1994). According to Dechow's study, two important principles in accounting drive the production of earnings which are: the revenue recognition principle and the matching principle. Based on these principles, the accrual process is hypothesised to mitigate timing and matching problems in cash flows, so that earnings will more closely reflect firm performance. Accruals can also improve the ability of earnings to measure the firm performance that is documented by the FASB. As an illustration, see Statement of Financial Accounting Concepts (SFAC) No.1, paragraph 44

> *"Information about enterprise earnings and its components measured by accrual accounting generally provides a better indication of enterprise performance than does information about current cash receipts and payments."*

Nichols and Wahlen (2004) summarize the theory on how accounting earnings information relates to stock returns of firms, particularly for the benefit of students and practitioners. Their research outlines the theory connecting the earnings numbers of firms and stock returns. This connection is based on three assumptions about the information contained earnings and share prices. First, the theory assumes that earnings present information to shareholders about profitability in current and future terms. Second, the theory supposes that current and future expected profitability presents to shareholders information about the firm's dividends in current and future period. Third, the theory assumes that a stock price equals the present value of expected future dividends accruing to the shareholder. Researchers test these theories with empirical data and they examine the associations between accounting earnings numbers and stock prices underlying the associations implied by each of the above links. Figure 2.2 demonstrates that current period - earnings numbers provide important information that is useful for forming dividends expectations about current period wealth creation, and information about potential earnings in the future. For the former firms use accruals accounting to measure the effects of transactions on shareholder equity earnings: therefore, current period earnings contain important information about the wealth that will be created for shareholders. For the later, current earnings and information from the financial statement present useful information to determine future earnings.

Figure 2.2
The three links relating earnings to stock returns (Nicols and Wahlen, 2004)



Finally, link 3 provides an approach to assess equity: the share price is the present value of future dividends that the shareholders expect to receive over the remaining term of the firm. Generally, if earnings are higher than expectations, share prices will increase; if earnings are less than expectations, share prices will decrease. The size of any increase and decrease of share price depends on many factors. The persistence of unexpected earnings is the most substantial factor. In other words, when a firm announces unexpected earnings, then it can be concluded that the share's price will probably modify soon. Besides, when the firm announces an unexpected change in earnings, it can be expected that this persistence will continue in future, and share prices generally rise or fall to the relation between current and future earnings persistence.

Jegadeesh and Titman (1993)[19] show that a strategy of buying stocks that have strong performance in the past and selling stocks that have performed poorly in the past create significant positive returns over 3 to 12 month holding periods. They rank stocks into deciles based on their returns over previous quarters. According to their research, buying stock in the highest deciles and selling stock in the weakest is recommended. They also skip a week between formation and holding periods to avoid the price pressure and lagged reaction effects.

Jegadeesh and Titman (1993) examine the profitability of the six-monthly strategy (six month formation and six month holding period) within subsamples which is stratified on the basis of firm size and ex- ante estimates of betas[20]. They find the momentum strategies within the subsamples show returns increase with beta and are not related strongly to size. They find a momentum strategy yields losses about 7% on average including January, which becomes 1.66% per month excluding January. They find returns in two-thirds of months are positive (about 60% in big firms) but it is positive 96% of Aprils and 24% of Januaries. They also show that if the holding period is longer than 12 months, with every holding period after this term, the end of month 12 gives rise to a negative return.

[19] They show at the zero-capital position by average about 1% a month profits, works better than holding for longer periods. Thus, they consider 12-month formation period, 3-month holding period and one week as a lag between formation and holding periods to achieve earning 1.49% per month. Jegadeesh and Titman (1993) find that the winner firms have larger average size but smaller average beta compared to loser firms. Therefore, the result shows that long period portfolio with negative beta, are subjected to systematic risks that do not support their returns. According to their study, the factor autocorrelation neither explain the changing in profits nor does a lead-lag model, in which case securities consistently overreact to the market factor, or under react to it.

[20] Chordia and Shivakumar (2006) divide momentum strategies into price momentum and earnings momentum. The former strategy is based on expectations of a short-run continuation in returns, buying past winners and selling past losers, and the latter is based on post-announcement drift.

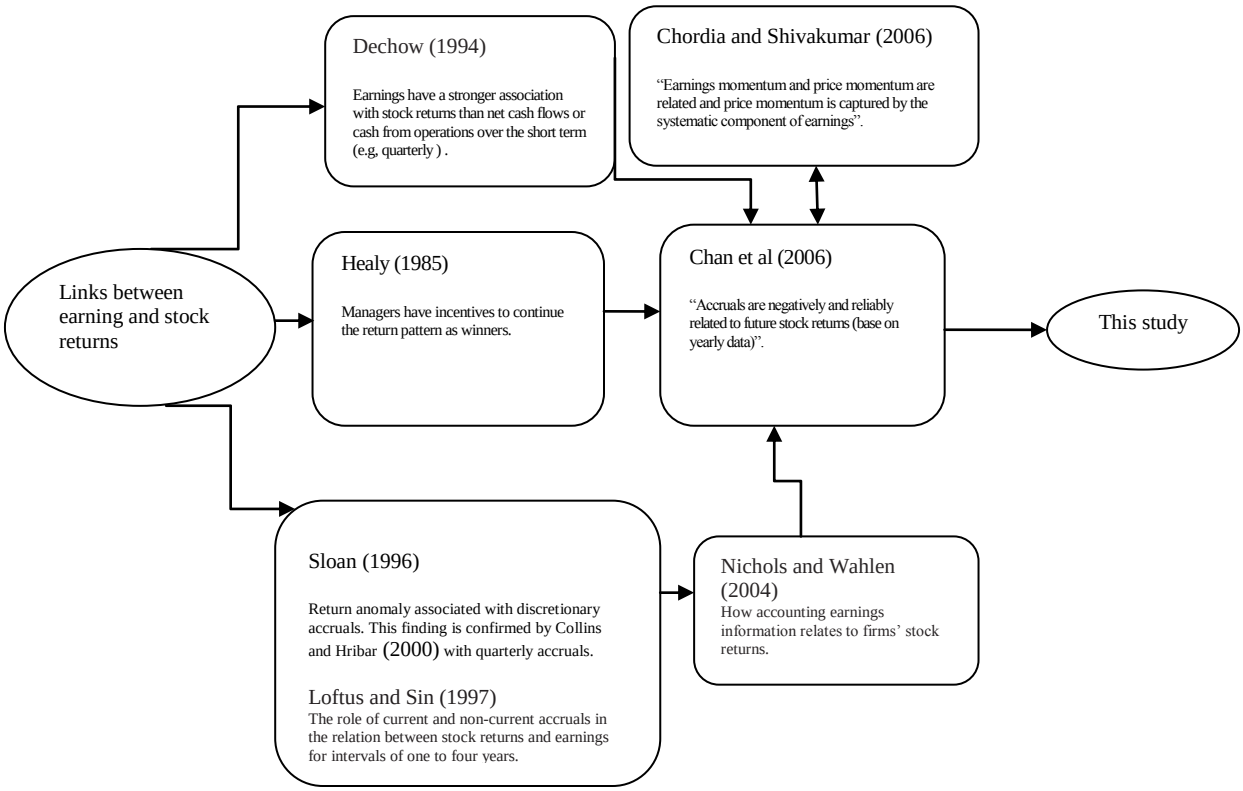
DeBondt and Thaler (1985) investigate stock return reversals over 3 year horizons. They create equally-weighted portfolios based on excess return of stock over the market. For every stock with 85 months of prior data, every three years starting in December of 1932, they determine firms to be either winners or losers. They compute residual values and then they find average excess return as the average of the residual returns from each stock during the last 36 months. They rank the stocks (top 35, top 50, and top 10%). Their results show that most of the returns' differences are created in January and many of them occur after two years of the holding period. They also find formation periods require at least two years for the reversal, and it continues even after 5 years. The authors include risk adjustment, their results show the winner portfolio has lower CAPM beta than the loser portfolio.

If the earnings momentum can be split from the price momentum as separate factors, the effect of one factor on the other factor can be controlled. In fact, these factors could be independent variables to explain parts of the return (Chan et al., 1996). Chan et al. consider a 4 to 5 days gap between the portfolio formation date and the holding period. They employ four variables as measures of earnings and abnormal price momentum; the variables are returns, standard unexpected earnings (SUE), analyst revision (ARV) and the past 6-month returns (RET6). They rank stocks on the basis of either past returns or a measure of earnings news. Then they assign the ranked stocks to one of ten deciles portfolios. In their earnings momentum strategies, they use the Standardized Unexpected Earnings (SUE) variable as a measure of earnings news. They examine whether the continuation in past price movements and the under-reaction to earnings news are the same phenomenon. They find that each of the variables they

analyse - prior return, as well as each of the earnings surprise variables considered - has marginal predictive power for the post formation drifts in returns.

In 1998, Conrad and Kaul argue momentum profits result from cross-sectional dispersion in expected stock returns. They believe that momentum profits make money because investors purchase stocks with high expected return, and sell low-expected-return stocks. Jegadeesh and Titman (2002) do not admit this, instead they consider a weighted momentum strategy where investors purchase stocks with weight proportional to their past return minus the market return over that current period. Figure 2.3 shows how some prior researches motivate this study.

Figure 2.3 How prior research motivates this study



2.5 Summary

In this chapter the literature on the main research topics of earnings management and stock returns is discussed. The chapter also describes the main methodologies used throughout the study for exploring these research topics.

This chapter is subdivided into three sections; the first section explains the incentives of managers to maintain growth in earnings and the main reasons for managing earnings. Section two describes the kinds of accruals and the role of accruals components such as inventory in accruals and related earnings management. Finally, the third section provides an explanation of stock returns. Links between income and growth stocks, and also between accruals and stock returns, are discussed.

As mentioned earlier, this thesis focuses on accruals accounting used by managers and how it may mislead users of financial information when interpreting reported earnings. According to the most of the research documented in the literature review users are unable to assess correctly the persistence of earnings or the pricing implications.

Gaps in the existing research literature are identified with respect to accruals and short term returns for winner and loser companies in the UK. These gaps include the absence of thorough tests of earnings management in short term returns in the UK using interim data.

Chapter 3

Interim accounting reports

3.1 Introduction

Interim reports are summary statements that, in the UK, are usually prepared in semi-annual format. Until the EU's Transparency Directive was implemented in the UK in 2007, there was no legal requirement for firms to prepare interim reports.[21] Instead such preparation was only a requirement of the London Stock Exchange. The obligation on firms listed on the London Stock Exchange to prepare these reports was first made as a recommendation in 1964, to meet demand for updates by financial analysts (May, 1971). In 1973, this recommendation to provide the market with interim information became a requirement for the admission of securities to listing on the Exchange (Lunt, 1982).

In the UK, the first guidance on this topic from the regulator was *Interim Reports* (Accounting Standards Board, 1997). More recently, these guidelines have been re-placed by a new statement entitled *Half-yearly Financial Reports* (Accounting Standards Board, 2007). For listed companies, however, the Financial Service Authority, implementing the Transparency Directive, requires these companies to apply IAS 34,

[21] The Transparency Directive (TD) was published in the Official Journal of the EU on 31 December 2004, and came into force as a Directive on 20 January 2005, with a 24 month implementation period. The TD was was implemented in the UK on 20 January 2007.

Interim Financial Reporting (International Accounting Standards Board, 1998, 2010). According to Deloitte (2010), the impact of IAS 34 is as follows[22]:

> *"IAS 34 'Interim Financial Reporting' prescribes the minimum content of an interim financial report. It outlines the recognition and measurement principles which are to be followed in interim financial statements."*

Another aspect of interim financial reports worth highlighting at this stage is that they are not audited, which might be thought to influence their reliability for investment decision-making, although both Firth (1981) and Opong (1995) show that the UK market, like the US market, appears to incorporate interim information into prices relatively quickly. Opong finds interim financial reports contain information that is price sensitive and the impact of this information occurs on the day such reports are released.

3.2 Interim reports and accounting standards

Professional guidelines for the preparation of interim reports have been in place in the USA since the 1970s, in the form of APB Opinion No. 28, *Interim Financial Reporting* (Accounting Principles Board, 1973). It is worth noting here that, whilst interim reports in the UK are prepared semi-annually, this is different to the situation in the US where they are prepared on a quarterly basis as legally required by the Securities and Exchange Commission. In fact, the SEC's founding charter in 1934 gave it authority to require interim reports, but, in the face of considerable opposition, although the requirement was

[22] IAS 34 determines the minimum content for an interim financial report and the principles for recognition and measurement in such reports, for more information see http://www.ifrs.org/NR/rdonlyres/2E15F246-850B-4717-987B-50C21C375EF5/0/IAS34.pdf.

first introduced in 1946, it was dropped in 1952, and then reintroduced again in 1970 (Yee, 2004). Through the FASB, accounting standards in this respect were first developed as SFAS No. 3 *Reporting Accounting Changes in Interim Financial Statements* (Financial Accounting Standards Board, 1974) and further as SFAS No. 18 *Financial Reporting for Segments of a Business Enterprise: Interim Financial Statements* (Financial Accounting Standards Board, 1977). Under the regulatory framework now in force in the USA, it is Regulation S-X and subsequent Financial Reporting Releases that set out the formal requirements for interim financial statements as required under the securities legislation, with regular modifications between 1981 and 2011.[23]

In the UK, when the ASB first published *Interim Reports* (Accounting Standards Board, 1997), it was designed to have persuasive influence over best practice rather than mandatory force (it was not issued formally as an accounting standard because interim reporting was not required under the Companies Act). The ASB's 1997 statement proposed that interim reports should be drawn up by employing the same principles and practices used for annual reporting, and that such reports should include a narrative commentary and a summarised profit and loss account, balance sheet and cash flow statement, together with details about exceptional items, acquisitions and discontinued operations, and comparative figures both for the corresponding interim period and for the previous full financial year.

In July 2007, the 1997 statement was re-titled *Half-yearly Reports*, having been updated and revised as a result of new disclosure and transparency rules. It should be

[23] The relevant Financial Reporting Releases are: 46 FR 12489 (Feb 17, 1981), 50 FR 25215 (June 18, 1985), 50 FR 49533 (Dec 3, 1985), 57 FR 45293 (Oct 1, 1992), 64 FR 73401 (Dec 30, 1999), 73 FR 956 (Jan 4, 2008), 74 FR 18616 (Apr 23, 2009), 76 FR 50120 (Aug 12, 2011).

noted, however, that this thesis is concerned only with UK listed companies, and their interim reporting is now required to be in accordance with IFRS.[24] The development of an international standard started with exposure draft E57 in 1997, leading to the publication of IAS 34 *Interim Financial Reporting* (International Accounting Standards Board, 1998), which became effective on 1 July 1999. A related IASB Interpretation has been issued since then, i.e., IFRIC 10 *Interim Financial Reporting and Impairment*,[25] (International Accounting Standards Board, 2006), which became effective for annual periods beginning on or after 1 November 2006. Also, there have been two consequential amendments to IAS 34, one arising from the revision of IAS 1 in 2007, and the other arising from the Annual Improvements Programme in 2010.[26]

Whilst IAS 34 specifies the content of an interim financial report conforming to International Financial Reporting Standards, it does not mandate which entities should publish interim financial reports, nor how frequently. The IASB leaves such matters up to national governments, securities regulators, stock exchanges, and/or accountancy standard setters. However, the Standard encourages interim financial reports, at least for

[24] For fully-listed companies, the first set of consolidated accounts which had to be prepared under IFRS was for the first period that commenced on or after 1st January 2005, i.e. for companies with December year ends, the first IFRS accounts were for the year ended 31st December 2005.

[25] In 2006, The International Financial Reporting Interpretations Committee (IFRIC) issued an Interpretation IFRIC 10 *Interim Financial Reporting and Impairment*. The Interpretation addresses the apparent conflict between the requirements of IAS 34 *Interim Financial Reporting* and those in other standards on the recognition and reversal in financial statements of impairment losses on goodwill and certain financial assets. IFRIC 10 states that any such impairment losses recognised in an interim financial statement must not be reversed in subsequent interim or annual financial statements.

[26] The effective date of the latest (May 2010) amendment to IAS 34 is 1 January 2011.

the first half of the financial year, to be made available not later than 60 days after the end of the interim period.[27]

IAS 34 recommends the following minimum content of the interim financial report:

- a balance sheet as of the end of the current interim period and a comparative balance sheet as of the end of the immediately preceding financial year;
- a statement of comprehensive income (and income statement, if presented) for the current interim period and cumulatively for the current financial year-to-date, with comparative statements for the comparable interim periods (current and year-to-date) of the immediately preceding financial year;
- a statement of changes in equity cumulatively for the current financial year-to-date, with a comparative statement for the comparable year-to-date period of the immediately preceding financial year;
- a statement of cash flows cumulatively for the current financial year-to-date, with a comparative statement for the comparable year-to-date period of the immediately preceding financial year; and

IAS 34 requires that the same accounting policies should be applied for interim reporting as are applied in the entity's annual financial statements. An example is for accounting policy changes made after the date of the most recent annual financial statements that are to be reflected in the next annual financial statements (IAS 34.28). A key provision is that an entity should use the same accounting policy throughout a single financial year. If a

[27] Before 20 January 2007, listed companies were required to issue an interim report within 90 days of the period-end. For accounting periods beginning on or after 20 January 2007, a half-yearly report must be issued within two months of the period end.

decision is made to change a policy mid-year, the change is implemented all together, and previously reported interim data is restated (IAS 34.43).

Measurements for interim reporting purposes should be made on a year-to-date basis so that the frequency of the entity's reporting does not affect the measurement of its annual results. The following considerations are made explicit in this respect:

- Revenues that are received seasonally, cyclically or occasionally within a financial year should not be anticipated or deferred as of the interim date, if anticipation or deferral would not be appropriate at the end of the financial year (IAS 34.37);
- Costs that are incurred unequally during a financial year should be estimated or deferred for interim reporting purposes if, and only if, it is also appropriate to anticipate or defer that type of cost at the end of the financial year (IAS 34.39);
- Income tax expense should be recognised based on the best estimate of the weighted average annual effective income tax rate expected for the full financial year (IAS 34.B12).[28]
- If the companies' business is highly seasonal, IAS 34 encourages disclosure of financial information for the latest 12 months, and comparative information for the prior 12-month period (IAS 34.21).

Although there is no formal requirement for auditors to review half-yearly reports before they are published, directors can arrange for a review to be carried out as a separate engagement. Previously, the Auditing Practices Board Bulletin *Review of Interim*

[28] Appendix B to IAS (34) provides guidance for applying the basic recognition and measurement principles to various types of asset, liability, income and expense.

Financial Information (Auditing Practices Board Bulletin, 1999) set out guidance for auditors on the procedures to be undertaken when reviewing half-yearly reports. For accounting periods ending on or after 20th September 2007, this is superseded by APB's adoption of the International Standard on Review Engagements (UK and Ireland) No. 2410, *Review of Interim Financial Information Performed by the Independent Auditor of the Entity* (Auditing Practices Board, 2007). This takes account of the changes to the detailed requirements on the publication of the half-yearly reports by UK listed companies as a result of the EC Transparency Directive. Where the auditor's work is carried out in accordance with the ABP guidance, the auditor's review report should be published in the half-yearly report. If the scope of the work carried out by the auditor is less than that set out in the APB guidance, the directors should describe the financial information in half-yearly report as 'neither audited nor reviewed'.

The S-X Regulations in the USA also allow interim reports to be unaudited. It is worth noting here that they may be highly condensed financial statements. For example, under SEC rules, interim balance sheets and income statements only need to include only major captions (with the exception of inventories, where data on raw materials, work in process and finished goods inventories must be included either on the face of the balance sheet or in the notes to the financial statements). Where any major balance sheet caption is less than 10% of total assets, and the amount has not increased or decreased by more than 25% since the end of the preceding fiscal year, the caption may be combined with others.

Similarly, when any major income statement caption is less than 15% of average net income for the most recent three fiscal years and the amount has not increased or

decreased by more than 20% as compared to the corresponding prior interim period, the caption may again be combined with others.

The statement of cash flows may also be abbreviated, starting with a single figure of net cash flows from operating activities and showing cash changes from investing and financing activities individually only when they exceed 10% of the average of net cash flows from operating activities for the most recent three years.

These detailed rules in the US demonstrate how firms can provide highly aggregated data in their interim financial statements, which, together with audit considerations, have given rise to a number of influential research studies investigating the quality of interim financial statements, which is the background to the present thesis.

Brown and Pinello (2007) investigate the efficiency of the financial reporting process at restraining earnings surprise games. They argue that the annual reporting process is subject to an independent audit while the interim reporting process is not. Also the annual reporting process has more precise expense recognition rules than the interim reporting process. It follows that annual reporting gives managers fewer opportunities to manage earnings upward. They document that annual reporting reduces the probability of income-increasing earnings management. However it increases the magnitude of downward expectations management. Their findings show that regulatory attempts to monitor corporations' internal checks and balances are likely to be more effective at restricting upward earnings management than at justifying negative surprise avoidance. The Brown and Pinello results shows that annual reports, unlike interim reports, are subject to independent audits and more stringent expense recognition rules. Relative to the interim reporting process, they demonstrate the annual reporting process reduces managers' tendency to manage earnings upward. Also, their findings show that managers

use downward expectations management as an alternative method to earnings surprise games when their ability to manage earnings upward is restricted.

Mangena and Tauringana (2007) examine the effectiveness of agency related mechanisms on the level of disclosure compliance of interim reports with the ASB Statement. They show that overall disclosure compliance is not high and companies do not fully conform to the ASB Statement on interim reports. They use an ordinary least square (OLS) regression model to establish whether selected company-specific and corporate governance characteristics relate to the degree of disclosure compliance. Their results show that multiple listing, company size; interim dividend, and new share issuance are associated positively with the degree of compliance. Also, they find that the level of disclosure compliance is positively associated with auditor involvement, audit committee financial expertise and audit committee independence.

3.3 The quality of interim financial statements

Yee (2004) voices concerns that, in the US, the quality of interim financial statements may suffer from the fact that, without final audit, material transactions such as business combinations, restructuring provisions, major contracts and lawsuits, may not be allocated properly to the accounting period. This could result in final period adjustments when more focused audit procedures are performed on those events and transactions. Such adjustments can cast doubt on the integrity of the interim financial reporting, and cast a shadow over the reliability of interim financial statements. Furthermore, seasonality factors may create more volatile interim financial results, with revenues and costs in one particular period being shown as applicable to another period, and with uncertainties arising about costs that are not known until the fiscal year-end. These issues

may appear to be more acute under quarterly reporting in the USA, but it is notable that similar concerns are also raised with respect to semi-annual reporting, both in the UK (Opong, 1995; Mangena and Pike, 2004; Mangena and Tauringana 2007) and more widely in the EU (Schiller and Vegt, 2010).

Schiller and Vegt (2010) examine the effect of interim reporting on accounting quality. They assume that management's preferred objective is a high stock price. They argue that managers may bias accounting reports in each sub-period. Also, Schiller and Vegt assume that the enforcement system ties sanctions to the detected gap between total reported earnings and total cash flows at the liquidation stage. They argue that there are many circumstances in which interim reporting do not improve accounting quality. Their result indicates that biased reports in the short term go along with lower incremental sanctions at each reporting period. They seek another explanation for the low accounting quality of interim reports. They try to look at the strategic interaction between managers and investors.

Schiller and Vegt show that interim reporting improves accounting quality if there is equilibrium with earnings-inflating reports and if the manager's preference for having a high share price is sufficiently low relative to the sanctions for detected misreporting. Also, they believe the reverse consequences on accounting tend to occur if these preferences are sufficiently high relative to the sanctions. They show biased interim reporting even makes a problem if the manager has no short-term preference to get a high share price. The result has implications for the discussion of management compensation. To protect reputation, a manager will bias earnings in the short term even if there is no short-term incentive to do.

Yee (2004) presents four reasons in favour of interim reporting. First, he believes that improving the timeliness of disclosure helps investors monitor the performance of management and consequently reduces agency frictions. Second, if news can be incorporated more frequently in prices, this improves the efficiency of capital allocation. Third, spreading news across interim earnings announcements reduces information asymmetry between sophisticated and less sophisticated traders, which may improve market liquidity on earnings announcement dates. Fourth, by reducing interim information asymmetry between insiders and the public, more frequent interim reporting may reduce the usefulness of rent-seeking efforts by analysts trying to acquire undisclosed information. More specifically, by providing an indication of how the firm is progressing during the yearly reporting cycle, interim reports can aid financial analysts in predicting, at a minimum, the probable outcome for the year with respect to the variables of interest to them. That is, in providing an update on firms' activities to financial analysts in this way, interim reporting is able to contribute to a reduction in insider trading by putting into the public domain timely information which would otherwise be privately held until the year end (Opong, 1995).

Mensah and Werner (2008) examine empirically the extent to which the frequency of interim financial reporting affects stock price volatility over the course of the fiscal year in four countries with different interim reporting regimes: the United States and Canada with quarterly reporting, and Great Britain and Australia with semi-annual interim reporting. They argue in the trade-off between timeliness and predictive value of the interim reports, semi-annual interim reporting will lead to lower price volatility. These expectations are supported in their results. Furthermore, additional tests

conducted on American ADRs of British and Australian companies show that such firms have higher volatilities than comparable domestic firms on their home stock exchanges.

Mensah and Werner argue that the choice of interim reporting intervals could be important to get greater efficiency in the capital markets for two reasons. First, more frequent interim reports can signal that security prices show the latest firm-specific information, leading to more efficient security pricing. Secondly, more frequent interim reports can force firms to make more estimates. Therefore, more informed estimates are available only with the passing of time. However, the more frequent interim reports may be subject to more error (as viewed from the annual report standpoint). Thus, investor response to the more frequent interim reports may cause greater volatility in security prices.

The London Stock Exchange had long included among its listing requirements the production and distribution of interim financial reports at semi-annual intervals. Accounting regulators in Great Britain formally adopted such interim reporting rules only in 1997. The Accounting Standards Board of Great Britain's Statement on Interim Reports and their Statement on Preliminary Announcements (issued in July 1998) provided voluntary 'best practice' guidelines intended to supplement the guidelines of the London Stock Exchange. Mensah and Werner's results show that quarterly reporting appears to emphasize capital market volatility in the United States and Canada as compared to the capital markets in Great Britain and Australia.

An old argument against preparing more frequent interim reporting relates to the administrative costs associated with compiling and distributing such reports, although modern computer technologies and the internet have reduced the force of such arguments. Also, it is still unclear whether mandating more frequent interim reporting

actually does increase overall disclosure. According to McNichols and Manegold (1983), interim reporting simply provides information that would be otherwise disclosed in subsequent annual reports. Indeed, Gigler and Hemmer (1998) argue that mandating more frequent interim reports causes managers to reduce their voluntary disclosure.

According to Butler et al. (2002), in the United States unlike the UK, there is evidence that the establishment of mandatory quarterly reporting did not increase actual earnings timeliness. The main reason is that quarterly reporting replaced timely voluntary disclosures by firms beyond the financial statements. This may even have undesirable side effects, as Butler et al. claim, that forcing managers to report earnings more frequently may cause them to make unreasonable decisions, and reducing asymmetry information between competing firms through increasing the timeliness of disclosure can affect the nature of competition in the product market and may potentially distort productivity and innovation.

A further argument is that more frequent reporting may induce additional information collection activity by analysts and other users, with the increased expenditure on such activities being a social cost. For example, when Cuijpers and Peek (2010) examine how quarterly and semi-annual reporting affects investor information, they show that a firm's reporting frequency has no effect on the precision of that information, on average. However, in spite of some of the reservations expressed above, their analysis of price variance in announcement periods provides counter-evidence that an increase in reporting frequency can make financial reports more valuable to investors. That is, as investors in semi-annual reporters appear to obtain more pre-announcement information than investors in quarterly reporters, it may be construed that an increase in a firm's

reporting frequency reduces investors' incentives to acquire private information between consecutive announcement dates.

Recently, Doran (2011) shows that interim period earnings performance is related to year-end earnings performance. He measures earnings performance as the differences between reported earnings and forecasted earnings. He compares interim period and the year-end earnings performance by analysing two groups of firms. One of the groups contains as firms with only interim future reports included in the earnings forecast, the other group contains as firms where the forecast concludes at fiscal year-end. The results show that the fiscal year-end group has relatively unfavourable earnings performance.

Pahlevan and Ranjbar (2011) examine the factors (company attributes, management and performance) affecting the timeliness of interim financial reporting in the listed companies of Malaysia. Their research considers transparency as a company attribute, capital structure and the agency problem as characteristics of company's management. Also they consider growth, net gain, and profitability in the interim period as measure of company performance. They focus on the Malaysia exchange market and they choose the 30 largest and 70 mid-size companies listed in the main board of the Malaysia stock exchange in 2007. After exclusion of banks, financial institutes, and companies with lack of data, the remaining list includes 72 companies. The fourth quarter of 2007 is considered as the basis of interim financial reports. According to their research these companies disclose their reports with a lag of 54 days on the average. The official deadline for revelation of companies' quarterly reports is two months, therefore it is concluded that companies are inclined to disclose their reports with a delay.

3.4 Implications for research design

Dechow et al. (1998) argue that, whilst a shorter earnings measurement interval and a consequent increase in observations are the benefits that come from using interim data, short period data makes analytics and empirics more complicated by introducing considerable measurement error into the analysis. They also argue that seasonality in such data may require the analytics to be modified or the seasonality removed from the data prior to testing. The benefits, it seems, are more than offset by the difficulties of modelling and estimating the intra-year accounting process. In shorter periods, accruals are largely related to cash flows, which gives rise to greater differences in forecasts given the time-series properties of earnings, accruals and operating cash flows. In addition, there is evidence that the accrual process may differ between interim reporting periods, i.e. quarterly in the US (Collins et al., 1984; Kross and Schroeder, 1990; Salamon and Stober, 1994; Rangan and Sloan, 1998), and that more temporary earnings items and losses are reported in the fourth-quarter (Hayn and Watts, 1997), consistent with an accounting process that concentrates on an annual horizon.

The GAAP requirement that each quarterly reporting period be considered an integral part of the annual reporting period is consistent with evidence presented by Rangan and Sloan (1998) concerning the auto-regressive structure of seasonally differenced quarterly earnings. As the fiscal year progresses, estimates are revised and estimation errors from earlier quarters are incorporated in earnings, as they are realized. For example, merchandising firms, which are permitted to use the gross profit method to estimate cost of goods sold, appear to apply an estimated gross profit margin to reported quarterly sales to determine quarterly cost of goods sold in the first three fiscal quarters, whilst physical inventory levels are counted and audited to determine annual cost of

goods sold to prepare year-end financial statements. Taxes provide a second example of interim expense allocation. Firms calculate quarterly tax expense by estimating the effective tax rate for the full fiscal year and applying this rate to quarterly earnings, with the estimated effective tax rate than being updated.

These inferences are not new. In a relatively early study, Newell (1969) states that, since year-end adjustments have a significant effect on the last interim period (the fourth quarter in the US), revenue and other expense items in the reported net income will often be affected. Newell's study demonstrated how interim data are subject to many limitations, e.g. (a) the allocation of annual fixed costs to interim periods; (b) the allocation of windfalls or miscellaneous revenues; and (c) accounting for needed adjustments which are discovered only at year-end. Moreover, as interim statements were then unaudited, Newell pointed out the opportunity for the firm to present financial statements that are not derived as a result of principles acceptable to an independent public accountant, providing greater opportunities to 'manage' reported interim income than reported annual income.

Recent research in the UK echoes these considerations. Mangena and Tauringana (2008) investigate the relationship between audit committees and the decision to engage external auditors to review published interim reports. They use interim reports of 258 UK listed companies, and find that engaging an external auditor to review interim reports increases with audit committee independence and financial expertise, concluding that such decisions can enhance the quality of interim financial reporting.

3.5 Summary

This chapter has described interim accounting reporting in the UK, including professional guidelines for the preparation of interim reports, and accounting standards for interim reporting. Also presented is a discussion of the main purpose of interim reports, the methods of preparation, the benefits of reviewing the reports, and empirical research about them.

Chapter 4

Methodology and hypothesis development

4.1 Introduction

The review of prior research in previous chapters reveals an unresolved issue in understanding the effects of discretionary accruals on stock price, specially the short-term effects on return momentum. This chapter is concerned with specifying the likely connection between earnings management and short-term stock returns, focusing on the accrual process in interim and year-end reporting in firms that are either winners or losers in the market. Return momentum may be seen as a market anomaly if firms are able to maintain their positions as winners through earnings management. A similar argument may be made when firms are able unexpectedly to reverse their track record as losers. Neither behavioural nor rational theories about investor behaviour have been able to explain this abnormality appropriately. The present study does not focus on the behaviour of investors or on the underlying business conditions that are faced by firms. Instead, this study follows the actions of the other party involved in influencing stock returns, namely the managers who engage in earnings management in winner or loser firms, either to signal changes in business conditions or to mislead investors and affect share prices for their own benefit.

This study examines how managers judge and manage financial reports, by using accounting accruals to report earnings. Ball and Shivakumar (2006) provide evidence that

accruals are used to reflect the timely recognition of economic losses[29]. This aspect of accrual accounting has important implications for the interpretation of accruals.

In this chapter, the main set of methodologies is introduced that is used throughout the study to explore the main research topic, which is to find the theoretical links between earnings management by means of accrual accounting and stock returns.

4.2 Investors and expected returns and earnings management

Investors are not necessarily able to interpret earnings manipulation; hence they cannot be immediately aware of the quality of earnings in determining stock prices (Louis et al., 2005). As stated in the literature review, an investor's inability to fully incorporate earnings quality into stock prices is for a variety of reasons. Managers do not disclose information required to determine the quality of earnings when they announce the earnings. Therefore, investors misprice earnings at the time of the earnings announcement because accrual information is not fully disclosed. Mispricing in earning announcements may be only partially corrected when the information is reviewed at the end of year by the securities and Exchange Committee. In addition, whenever accruals information is disclosed, or the level of short-term trades is high, discretionary earnings are discounted in the earnings announcement. This study tries to find the relation between return momentum and accruals in earnings at times when there is inadequate disclosure and when a low level of short term trades exists.

[29] Ball and Shivakumar (2006) argue that economic gain and loss can be considered as the current-period cash flow. According to this argument, timely recognition of gains and losses must be shown in part through accruals since it is based in part on revisions of future cash flow expectations.

4.3 Winner firms and loser firms

Grundy and Martin (2001) provide the definition of winners and losers that is adopted in the present study. Winners and losers are defined as stocks in the top and bottom deciles of return performance over a six-month ranking period. Chordia and Shivakumar (2006) adopt this same approach towards winner and loser portfolios to ask whether earnings momentum and price momentum are related. They test for price momentum by using a strategy that purchases previous winners' stock and sells previous losers' stock. Afterwards, they assess whether a portfolio combining stocks from the top and bottom deciles of return performance over the prior six-month period earns abnormal returns. The winners-minus-losers portfolios (WML) are compared with an earnings-based zero-investment portfolio[30] according to the most recent earnings surprises. Then, the difference is measured using the standardised unexpected earnings (SUE) formula.

Chordia and Shivakumar group firms into deciles according to their returns. They create portfolios having the highest earnings surprise and the lowest earnings surprise and deduct them (i.e. the positive-minus-negative portfolio, or PMN).

The main research question is to see whether winner and loser returns persist in the short term, and how this may relate to predictable earnings management behaviour. The question is whether past returns can drive future earnings management, and, if they can, is there any correlation between earnings management and future returns. In the main model, future discretionary accruals are considered as a function of past returns and other control variables, in which a significant relationship with returns is taken as the confirmation of the

[30] Taylor (2004) demonstrates that a zero-investment portfolio is *established by buying and shorting component securities, usually in the context of an arbitrage strategy*." When shorting a stock, the shares are not owned by the investor but borrowed through a broker and sold in the market and later repurchased to replace the loan.

market's expectation of future earnings management. All stocks in the sample are based on the past six months' returns. Future six months' earnings management are scaled by discretionary accruals. Then the model is tested to see whether a difference between portfolios exists, and whether the returns of winner or loser firms are impacted by earnings management.

This thesis shows that winner and loser firms try to continue the return pattern from the first period to the next period by using discretionary accruals. Also, this study attempts to find whether the returns over the next period correlate negatively with discretionary accruals; and can the positive or negative earnings management create positive or negative returns? In other words, do accruals drive the returns in the same period, i.e. synchronously?

In this thesis, the objective is to see whether discretionary accruals are a measure of earnings management. In examining the related hypotheses, linear regressions are applied to portfolios containing winner and loser firms. We expect a negative relationship between accruals and future stock returns as documented for yearly data by earlier researchers e.g, Sloan (1996) and Chan et al (2006). Firms with high current accruals have a large increase in accruals over the past period, accompanied by a substantial deterioration in cash flows. The high accrual for each period marks a turning point in the fortunes of these firms. Firms with large accruals exhibit high levels of past earnings and sales growth (see Chan et al, 2006). Firms continue to report growing earnings even as accruals are high, and only in the subsequent period do earnings show signs of deterioration. As a result, the time-series behaviour of accruals and operating performance for firms with the largest accruals give strong evidence that managers are manipulating earnings, and the market is misled. Furthermore, in subsequent periods, the amount of income-decreasing special items relative

to total assets is larger for the firms with high accruals.

In present thesis past returns are ranked to determine winner and loser firms and then discretionary accruals are examined for the future period, to see if there is a positive correlation between the components of earnings management. It is shown that some manipulation and engagement is done by managers of firms for the future period. To study the impact of earnings management on the short-term returns of winner and loser firms some steps are carried out. First, returns are computed as will be discussed in the data collection section (Chapter 5). Second, firms are classified by returns into quintiles. The data for six-month portfolios and lagged data are for the previous six-month period in accordance with the method of Jegadeesh and Titman[31] (1993). Third, since stocks can be ranked based on return portfolios according to their past performance, stocks' past returns can be used for the next six months after the formation of the portfolio. Thus, the ranking variable used in this study is a stock's past compound raw return.

'Winners' are firms whose returns are among the best and remain positive at the top of the portfolio in the next period (months 7-12). Similarly, 'Losers' are firms whose returns are among the worst and remain negative at the bottom of the portfolio.

In Chapter 7, stock returns of winner and loser firms are presented by each interim period. Loser firms fall in the lower quintiles of returns over the last six months. It is also important to know that the transaction shares of 'winners' could be increased, when most investors are interested in purchasing winner's stock, because investors could expect a repeat performance occurs in the following period. Also, investors, by forming an arbitrage

[31] Following Jegadeesh and Titman (1993) and Chordia and Shivakumar (2005), we form quintile portfolios to avoid test statistics anchored in overlapping returns.

portfolio holding winners and shorting losers, can get more profit and diversify the risk portfolio.

This study determines whether past returns motivate managers of 'winner' firms to manage earnings. It seems that two sorts of factors can impact manipulation by managers: external factors which are the financial and economic conditions of the firm; and internal factors which are the accounting activities relating to the profit or loss of the firm.

Skinner and Sloan (2002) find evidence that managers avoid reporting disappointing earnings because the stock price of their firm may be affected negatively. Management is rewarded if stock returns do not show disappointing earnings surprises. Conversely, management may lose if their firm has disappointing earnings compared with other firms. Managers avoid disappointments by inflating earnings through the manipulation of accruals.

4.3.1 Momentum and contrarian strategies

In this study, quintile research design uses a trading strategy to test for price momentum and earnings momentum, following Chordia and Shivakumar (2006), their approach is summarised as follows:

a) *Price momentum*. This strategy is based on expectations of a short-run continuation in returns, buying past winners (long in stocks that increased in price in the previous period) and selling past losers (short in stocks that decreased in price in the previous period).

b) *Earnings momentum* (also referred to as post-announcement drift). In this case, it is presumed that firms reporting unexpectedly high earnings

> subsequently outperform those firms that report unexpectedly low earnings; a zero-investment portfolio is constructed that buys (holds long) the highest earnings surprise portfolio and sells (holds short) the lowest earnings surprise portfolio.

The profitability of price momentum strategies is documented in an earlier study by Jegadeesh and Titman (1993). Later, all the anomalies were examined by the Fama and French (1996) in their three-factor model. Jegadeesh and Titman (2001) show that their initial results are not due to data mining; it is typically the hardest to address because empirical research in non-experimental settings is limited by data availability as profits to momentum strategies. They show profits to momentum strategies of about 1% per month. Furthermore, Chordia and Shivakumar (2006) examine the relationship between earnings momentum and price momentum. They find that price momentum is captured by the systematic component of earnings momentum. Ball and Brown (1968) document the earnings momentum strategy (the pre-earnings announcement drift) for the first time and others, such as Foster et al. (1984), Bernard and Thomas (1989) and Foster et al. (1984), confirm the robustness of Ball and Brown's (1968) findings. Chordia and Shivakumar show monthly returns to earnings momentum portfolios (in the US, 1990-1999). Since stock prices are likely to be driven by earnings, we test whether they articulate a strong rationale for the strategies as follows:

Table 4.1 Momentum strategies

	Price momentum	**Earnings momentum**
Buy	***"Winners"***	***Positive earnings surprise***
Long	Highest past returns	Highest unexpected change in earnings
Sell	***"Losers"***	***Negative earnings surprise***
Short	Lowest past returns	Lowest unexpected change in earnings

Price momentum is the strategy that buys past winners and sells past losers, earning abnormal returns for a period of up to one year after the performance of the strategy. Earnings momentum refers to the fact that firms reporting unexpectedly high earnings outperform firms reporting unexpectedly low earnings. The superior performance lasts for about nine months after the earnings announcement.

Forbes et al (2012), the contrarian strategy can be described as: stocks in the lowest 'earnings to price' or 'book value to price' decile are judged most overvalued and hence sold with the proceeds being used to buy stocks in the highest decile. They also describe this as: the most glamorous stocks (lowest decile of earnings to price, cash-flow to price, or market to book ratio in the last year) are sold each year in favour of the most valuable stocks (highest decile of earnings to price, cash-flow to price, or market to book ratio) in order to access the value-premium.

Table 4.2 Contrarian strategies

Sell	***"Winners"***	***"Glamour"*** *– overvalued*
	Highest past returns	Lowest earnings: price, Lowest book: market, etc.
Buy	***"Losers"***	***"Value"*** – undervalued
	Lowest past returns	Highest earnings: price, Highest book: market, etc.

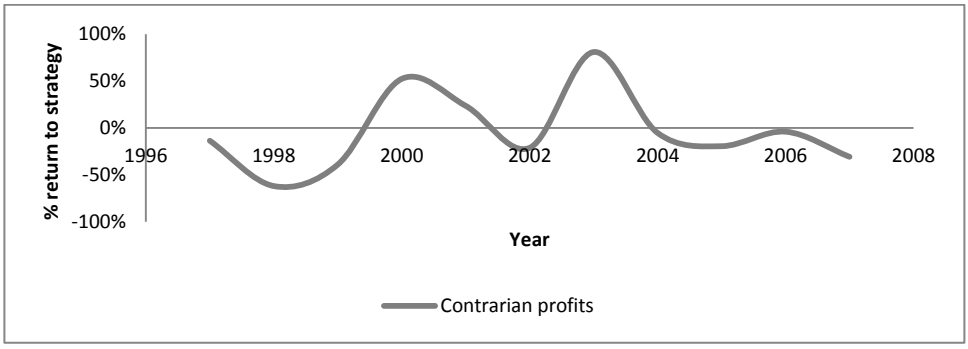
The seminal papers use simple univariate strategies based on sorting stocks by past returns (De Bondt and Thaler, 1985) and earnings to price or book to market (Lakonishik, Shleifer and Vishny, 1994). “Glamour stocks” are overvalued because high PE (i.e. low EP) implies earnings are expensive

Forbes et al (2012) describe price momentum as well as contrarian strategies. For returns-based tests, stocks that have lost value in the recent past (the decile of stocks containing the worst performers in the last year) are bought, their purchase being funded by the sale stocks that have gained value in the recent past (the decile of stocks continuing best pattern in the last period).

Forbes, Kiselev and Skerratt (2012) give the following result for US S&P stocks, using simple price-based contrarian trading strategies (as suggested by De Bondt and Thaler, 1985: buy losers over the last year, funding the strategy by selling prior winners over the same period). Figure 4.1 demonstrates that the return to this contrarian strategy is very volatile, yielding a small loss when averaged over the whole period. In other words, a price momentum strategy would yield a small profit overall but it is equally volatile.

Figure 4.1 Contrarian profits to strategy based on past returns

(Source: Forbes, Kiselev and Skerratt, 2012)



Dissanaike and Lim (2010) refer to the two strategies as follows: the extreme decile of loser/value (winner/glamour), stocks is formed to portfolio one (ten). The contrarian portfolio is presented as the loser/value portfolio (one) minus the winner/glamour portfolio (ten). They investigate different contrarian strategies based on a variety of variables such as book-to-market, earnings-to price and past returns. The report on UK study where they sort into deciles based on past 3 years return. Their result shows that returns over years t_{+1} t_{+2}, and t_{+3} are equal 0.0153,0 .0865 and0 .1220 respectively. Also their return based on market-to-book value is 0.0865, 0.0618.

A variety of variables have been used to form contrarian portfolios: book-to-market, earnings-to price and past returns, to more sophisticated measures based on the residual income model (RIM) or the Ohlson model[32]. Dissanaike and Lim (2010) investigate whether: (a) contrarian strategies based on RIM perform better or worse than those based on the Ohlson model; (b) contrarian strategies based on more sophisticated valuation models (e.g. Ohlson and RIM) perform much better than the relatively simpler ranking variables that have been used so extensively in the finance literature. Given that the RIM and Ohlson models require greater information inputs and technical know-how, and make different implicit assumptions on future abnormal earnings, it is important to ascertain if they offer significantly greater contrarian profits to outweigh the increased costs that they entail. Indeed, a surprising finding is that simple cash flow-to-price measures appear to do almost as well as the more sophisticated alternatives. One would have expected the

[32] The Residual Income Method (RIM) is a model linking share price to book value, documented by earlier researchers such as Peasnell (1982), Ohlson (1995). The Ohlson model (OM) is established on the accounting-based residual income valuation model for equity valuation by Feltham and Ohlson (1995).

sophisticated models to significantly outperform the simple cash flow to price model for the reasons given by Penman (2007).

4.3.2 Theoretical timeline

An important issue for calculating portfolio returns over an investing period is that the returns should measure the wealth effects for an investor. Many studies have discussed multi-month holding-period portfolio returns based on decomposed monthly portfolio returns. Liu and Strong (2008) demonstrate a straightforward calculation of decomposed portfolio returns which preserve their buy-and-hold property, measuring the investor wealth effects. They construct this calculation of monthly portfolio returns from a multi-month holding period; this procedure naturally generalises to other intervals.[33] They demonstrate that the monthly portfolio return in each holding-period month is a weighted average with the weight attached to each stock in the portfolio depending upon the stock's performance over previous holding-period months. Liu and Strong (2008) show that rebalancing to equal weights is a common practice.[34]

The research on stock returns shows that the cross-section of stock returns relative to past returns is predictable. Debondt and Thaler (1985) find that long-term past losers result from long-term past winners over the subsequent three to five years**.** Further research suggests that

[33]Some studies reporting monthly portfolio returns are done by Lakonishok et al. (1994). They also use annual portfolio returns from a long-term investment horizon of five years to examine investment strategies. Wermers (1999) examines the relation between mutual fund herding and stock prices and reports herding-classified portfolio returns on a quarterly basis. Some authors use daily returns of deciles portfolios from a holding period of one quarter to measure persistence in mutual fund performance (Bollen and Busse, 2005).

[34] They find 16 papers in the Journal of Finance over the 10-year period 1996–2005 that clearly use the rebalanced method, as well as seven papers in the Journal of Financial Economics and four in the Review of Financial Studies also using the rebalanced method over the five-year period 2001–2005. Furthermore, some earlier studies use the rebalanced method, such as Chan et al. (1991), Jegadeesh and Titman (1993) and Lakonishok et al. (1994).

part of these predictable price changes occurs during the 3 to 12 months after the holding period, and may not exist permanently. According to Jegadeesh and Titman (1993), a portfolio formed on the basis of the last six months returns can realise an average cumulative return of 9.5% over the following 12 months. However, they find that losses occur in the following 24 months with the amount equivalent to half of the returns gained in the first 12 months.

Dargenidou et al. (2011) investigate how the firm's disclosure activities affect the mix of earnings information reflected in its current returns. They focus on explaining current returns in terms of innovations about current performance and future earnings expectations. According to their model, this information is captured by the level of current and future earnings after controlling for the already anticipated level of earnings (in terms of prior and current earnings) and future unanticipated innovations (in terms of future returns). According to their research, stock returns of the *i* firm for year *t* are measured over the 12 month period, ending three months after the fiscal year end.

Recently published papers in the Journal of Finance, the Journal of Financial Economics and the Review of Financial Studies using the rebalanced method (Liu and Strong, 2008) are listed in Appendix A.

In this study, the reference time is set at point zero, and the past period is defined as six months prior to the defined reference point (1-6). The future period is identified as six months after the reference point (7-12).

The stock returns are divided into two parts, winners and losers. If the stock returns over the one to six month period (1-6) are among the best, it signals a winner firm. In contrast, if the return momentum during the period is at the lower end, these stocks are labelled losers. Therefore, investors try to purchase the stocks of winner firms because they believe that these firms can make more earnings than loser firms over the one to six month period. On the other

hand, the stocks of the loser firms which have low returns are sold because of their earnings have fallen and are not expected to rise over the one to six month period. According to the return momentum that is related to price momentum, it is expected that winner firms try to keep their situation over the future period as winners; while the loser firms tend not to remain in their current situation over the same period. This issue has been documented by Chan et al. (1996).

In the following sections, the role of managers in winner and loser firms will be discussed, and hypotheses will be provided based on these assumptions.

4.3.3 Motivation of winners

Past stock returns can provide motivation for the management of winner companies to engage in earnings manipulation to get desirable results. Further analysis in the following chapter shows that the chief executive managers of companies; with current increases in stock prices have an incentive to maintain this increment as long as possible. There are three components to this argument:

The first component is associated with the business performance of firms; the second component discusses the earnings management relating to gain or loss functions appearing in the stock prices manipulated with surprise earnings; the third component relates to the compensation that managers achieve as an incentive factor. Each component will be discussed in detail below.

According to the first component, by considering the underlying performance of competing firms in the product market, firms can go through periods of extreme growth in economic earnings, but this growth reverts to the mean growth over time. For the second component, if companies having good economic earnings are reported as winners, these companies can face earnings disappointments over the seven to twelve month period.

Therefore, when managers look at the gain or loss from earnings surprises in their stock returns, they may see them as costly (Skinner and Sloan, 2002).

Skinner and Sloan show that growth stocks exhibit at least as many negative earnings surprises as positive earnings surprises. They also demonstrate that when earnings news is positive, returns are very high; thus, even when the news is good, the reaction of the market is stronger for growth stocks. As a result, managers are penalised if large numbers or moderate levels of earnings become the norm.

There is a limited volume of accruals that managers can use to inflate earnings and create earnings surprises. Regarding the gain or loss function that is described above, winner firms have great motivation to report positive accruals to meet investors' and analysts' expectations since they do not want to disappoint the market with small amounts. Many winner firms can remain winners only over an intermediate term because they have a limited supply of accruals with which to manage earnings.

The third motivation is the wealth and compensation of managers relative to stock prices. Documented findings demonstrate that managers have a motivation to hide low-level performance since their wealth compensation and reputation are affected by earnings (Weisbach, 1998). The relations between stock performance and wealth or compensation have been demonstrated in the literature. One type of relation is that the value of a CEO's options is related to the current market price. Most CEOs have options with various expiration dates. Therefore the longer the period over which the stock price is high, the more positive is the impact on the CEO's wealth by taking benefit of such options. This is the main reason that managers have motivation to employ accruals to manage earnings over the specified period from seven to twelve months; they want to maintain the return pattern from the previous six month period (1-6).

Managers have motivation to maintain the return pattern as winners in order to increase their compensation amount at the end of the year. Therefore, they can achieve full bonuses by managing earnings well. As a result, they choose decreasing income accruals to keep the opportunity to increase future compensation above this level (Healy, 1985).

As stated above, managers of winner firms have the motivation to continue their performance as winners. Therefore the first of two hypotheses maintained in this study is as follows:

H1: *Winner firms use discretionary accruals in the first semester to provide positive earnings surprises to remain as winners.*

This first hypothesis concerns positive accruals. As discussed above, managers have motivations to employ accruals to create positive earnings surprises, or at least not to face earnings disappointment, during the second semester. Therefore this study extends the present literature and implies that over the second semester, positive accruals for winner firms are expected, as well as positive earnings surprises for these firms.

4.3.4 Motivation of losers

Even though most of the research in earnings management concentrates on winner firms, some research focuses on the opposite side, which are loser firms. This is because losers face the same situation in terms of limited accruals and compensation motivations as winners. The relevant studies demonstrate that past stock returns cause management of loser firms to engage in earnings manipulation. Managers, who find decline in stock prices of their firms, have motivations to put the performance of their firms in the category of poor stock returns in the short or intermediate term rather than long-term.

Moreover, the motivations of loser firms to manipulate earnings come from a fundamental business performance. Generally, mean reversion in economic earnings implies that return momentum losers experience a period of significant decline in economic earnings over one to six month period. Furthermore, disappointing past earnings over one to six month period would make the market's expectations of earnings for the seven to twelve month period to be lower than they were over the one to six month period.

If the earnings management is not obvious, loser firms could have an easier time generating earnings surprises than average firms. Therefore, at first glance it might be suggested that losers do not want to remain losers over the seven to twelve month period. However, this simple viewpoint may not be appropriate when considering compensation systems. As stated in the classification of winners, the management compensation cycle is an annual process. Based on the existing literature, this demonstrates that, for a firm whose share price has dropped due to bad earnings reports over the first six months of the year, there is little motivation for its managers to use discretionary accruals to create earnings surprises during the following six months.

Earlier studies indicate that 'good news' is not recognised by the market and is not rewarded with positive returns in the first three quarters of the reporting year as much as it is rewarded in the fourth quarter, which is known as 'the fourth quarter good news effect' (Dempsey, 1994). Therefore, according to this research some managers of loser firms select to settle the continuing negative earnings surprise by gathering valuable discretionary accruals which can be utilised in future periods.

It is well known that managers of winner firms have motivations to restrict the decline in stock prices, and the period over which the stock prices are declining, for the same reasons described above for loser firms. This concept leads to the conclusion that when

managers are motivated by bonuses, they look for ways to escape from disappointing earnings, or to escape from positive surprises, as much as possible. Hence, according to the literature, stock options prices get reset after periods of bad performance (Chance et al., 2000).

Most of the research that follows winner firms also considers loser firms, as losers face the same gain-loss function, limited accruals and compensation motivations as winners. This study argues that past stock returns affect the motivations of the management of loser firms to take part in earnings manipulation. This study shows that firms with a recent decline in stock returns have incentives to continue having poor stock returns relative to other stocks over an intermediate period. With regard to management's incentives to manipulate earnings in loser firms, it is important to discuss what drives managers to manipulate earnings. Therefore, according to the above reasons, the second hypothesis maintained in this study is as follows:

H_2: *Loser firms attempt to keep their earnings as a loser in the short term in order to be considered as winner over the longer term*.

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Some loser firms are distressed. Researchers suggest that managers of firms with persistent losses and dividend cuts can select income-decreasing accruals so that they can keep a better position to renegotiate contracts during financially distressed periods (DeAngelo et al., 1994). Bad economic earnings over the one to six month period are assumed to be in the loser firm's classification 'distressed'. Indeed, such losers would have the incentive to continue the decline in earnings over the intermediate term of seven to twelve months and save accruals for the period after any contracts are renegotiated.

According to the relevant documents in the literature review, the hypothesis regarding loser firms is: "Loser firms use negative discretionary accruals over the seven to twelve month period to create negative earnings surprises to remain losers over this period". The above hypothesis suggests there will be lower earnings for loser firms on average over the seven to twelve month period compared with the one to six month period.

4.3.5 Experimental test support implications

Managers use accruals to manipulate earnings if the underlying economic earnings are not in a desirable trend. The opportunity to manipulate exists if managers have incentives and if investors do not fully incorporate the earnings manipulation into the stock price.

Moreover, if fundamental business conditions affecting economic earnings growth are better than anticipated for winner firms over the one to six month period, then the earnings growth will be expected to be excessive which leads stock prices to go up. This seats winner firms among 'return momentum winners'. On the other hand, disappointing growth that is potentially negative for a firm over the one to six month period leads to earnings falling in the next period. Loser firms among 'return momentum losers' continue over the seven to twelve month period to manipulate earnings towards accruals to maintain losers. In addition, the managers of winners experiencing mean reversion may manipulate earnings upward to create positive earnings surprises. In contrast, in loser firms experiencing mean reversion option compensation motivations may make management manipulate earnings downwards to continue their status as losers. Thus, they defer earnings gains to take their benefit in the next compensation cycle period.

Two main empirical assumptions follow the hypotheses mentioned above. First, there is a relationship between returns and earnings, and it is expected that past returns

are positively correlated with future earnings management. This implication comes straightforwardly from the existing hypotheses that winner and loser firms attempt to keep the return pattern from the one to six month period in the seven to twelve month period using discretionary accruals. The other assumption is that returns over the seven to twelve month period are positively related to current discretionary accruals for return momentum firms. The expectation is that positive or negative earnings management is used to create positive or negative earnings surprises. These surprises guide positive and negative returns so that a positive correlation between earnings management and returns is expected. In general, accruals can drive returns where the motivations are considered to continue the returns through earnings management.

In Chapters 5 and 6 empirical tests are performed to test these hypotheses. The tests focus on whether the data support the assumption that earnings for momentum firms provide the motivation to manage earnings in the seven to twelve month period. Earnings management is not reflected in earnings surprises and investors cannot use other measures like the return on asset (ROA) ratio to distinguish the use of earnings management. However, these variables are used as control variables in further analysis and empirical tests.

In Chapters 6 and 7, some methods for testing the hypotheses will be used. The first method employs linear regression. To test the hypothesis, a regression is run between discretionary accruals and past returns and other independent variables. According to the main regression, if the returns are explained by earnings management, then it is expected that a positive relation will be found between accruals and earnings.

The second method is presented in Chapter 7. Past returns are categorized and then analysed by looking at whether returns of winner or loser firms have higher or lower discretionary accruals over the seven to twelve month period. For testing the hypothesis,

dependent classification is used. First, tests are run on past returns to identify winners and losers, and then on consecutive discretionary accruals. Subsequently, it is seen whether there is a positive correlation between firms engaging in earnings management and their returns over the seven to twelve month period.

As stated in the literature review, there is less supporting argument for the motivation for earnings management by losers than by winners. The results are expected to be less supportive for the loser hypothesis than for the winner hypothesis. This research does show linear relations between discretionary accruals and stock returns.

The conservative view in accounting is that profits should be more persistent than losses, because financial statements do not recognise unverifiable increases in profits when they occur; rather they are recognised over future periods as and when the cash flows generating those increases are realised. For example, if an asset value increases because it is expected to throw off more future cash flows, then the profit will be recognised over the next several years. This implies that gains tend to be persistent. Otherwise, firms with positive earnings or earnings changes are likely to have recognised gains, and positive earnings and increasing earnings are also likely to be persistent.

Companies with negative or decreasing earnings are more likely to have recognised losses. According to Watts (2003), these losses do not recur in future periods; negative earnings and earnings decreases are less likely to be persistent compared with positive earnings and earnings increases, because those negative earnings and earnings decreases are transitory. The amount that persistence or transience of earnings and earnings changes are considered provides a measure of conservatism.

Skewness and variability are defined as two measures of conservatism of earnings distribution. Distribution of returns on assets, whether derived from a time-series of

individual firms or the cross-section of firm-years, is skewed negatively for most of the periods that have been examined by Givoly and Hayn (2000). They demonstrate that there is a significant increase in firms reporting losses on and a decline in the accounting rate of return on assets with increased skewness which indicates increased conservatism over time.

4.4 Accrual estimation

The treatment of gains and losses creates an asymmetry in accruals. Although losses tend to be fully recognised gains are not; periodic accruals tend to be negative, and cumulative accruals tend to be understated. This shows that negative periodic net accruals and negative cumulative accruals can be taken as measures of conservatism.

Generally speaking, conservatism tends to show those losses that significantly capitalise on reductions in future cash flows can create larger accruals than gains. This conservatism reflects increasing cash flow during the period of its occurrence.

Givoly and Hayn (2000A) find a significant increase in firms reporting losses accompanies a decline in the accounting rate of return. Their study shows that there is neither an increase in the incidence of negative cash flows, nor a decrease in the CFO-to-assets ratio. These results strongly suggest that the decline in profitability found in the examined period is not a result of a change in the distribution of the underlying cash flows; it stems from a change in the relation between cash flows and earnings.

Givoly and Hayn (2000) demonstrate that consistency in frequency of negative accruals across firms over a long period can be construed as conservatism. Their results show an almost continuous accumulative trend of negative accruals since the 1980s. They demonstrate that net income before depreciation is systematically and consistently below

cash flows from operations, and the pace of accumulation of accruals accelerates in the later periods, showing a change in the level of conservatism over time.

4.5 Summary

This chapter has presented an overview of the parameters affecting investors when earnings management takes place. It has also discussed the role of winner and loser firms in using accounting accruals in financial accounting, and the impact of this use on stock returns. It has been established that the motivations of winner and loser firms are tied to stock returns. Winner firms try to find solutions to keep their position as winners and, in contrast, loser firms try to keep their position as losers with the intention of changing their weak position to a strong position at a more suitable time.

Chapter5

Data definitions and sample characteristics

5.1 Introduction

The previous chapter reviewed the expected relation between discretionary accruals and stock returns, where hypothesising that their association is conditioned by a variety of other factors, and that the relation varies for winner and loser firms. This chapter describes the collection of research data required to test these hypotheses, and describes the methods used in preparing the data for the empirical study reported in this thesis. This discussion covers the criteria employed in initial sample selection and the processes involved in the construction of the final sample, highlighting the issues that have to be resolved when using commercial data sets in this respect, i.e. Thomson One Banker and Worldscope. As the reliability of all empirical research in accounting is ultimately achieved through the quality of the accounting data on which it is based, this aspect of the research study is described in detail below.

5.2 Data sources

The data set used for sample selection combines both interim and year-end accounting results, thus providing a time series of first-half and second-half data for each year for UK listed firm. The interim accounting data available through Thomson on Banker includes up to 100 financial statement items, from the balance sheet, the income statement and the cash flow statement. Note that, in the Thomson database, interim financial statement data may

be available not only semi-annually, but also may be given quarterly, depending on each individual company's reporting pattern, usually in response to additional listing requirements. Note also that, in Thomson, there are two effective options to download such data, either quarterly or annually. Hence, even for semi-annual interim data, the quarterly download function must be used. For UK companies, which are only required to report semi-annually, the first semester (interim) results are indicated in Thomson as 'second quarter' and the second semester (fiscal year-end) as 'fourth quarter'.

For UK firms, interim accounting data were required from 2001 onwards, and are generally available from 2004 through Thomson, who use the Worldscope source.[35] The market data used in the study are also obtained through Thomson, in this case from the Datastream source.[36] All variables used in this study are listed below, in two separate tables. Table 5.1 presents the descriptions of the accounting variables collected from Worldscope, and Table 5.2 the price and dividend variables from Datastream.

[35] The Worldscope Global Database is used in the financial industry for detailed financial statement data and profile data on public companies domiciled outside of the United States of America. Using primary source documents, Worldscope data analysts extract the data to global templates. The Worldscope database can be accessed through Thomson.

[36] Datastream is an extensive, historical time series database which provides financial and economic data, including equity market data. The Datastream database can be accessed through Thomson.

Table 5.1 Data definitions - Worldscope

Variable Name	Explanation	Worldscope Code
Total Receivables (*AR*)	Represents the amounts due to the company resulting from the sale of goods and services on credit to customers which should reasonably be expected to be collected within a year or within the normal operating cycle of a business.	02051
Cash and Short term Investments (*CI*)	Represents the sum of cash and cash equivalents.	02001
Total Current Assets (*CA*)	Represents total receivables, cash and equivalents, inventories, prepayments and other current assets.	02201
Short Term Debt and Current Portion of Long Term Debt (*SD*)	Represents that portion of debt payable within one year including current portion of long term debt and sinking fund requirements of preferred stock or debentures.	03051
Total Current Liabilities (*CL*)	Represents debt and other obligations that the company expects to satisfy within one year, i.e. short term debt, accounts payable, accrued payroll, income taxes payable and other current liabilities.	03101
Total Assets (*TA*)	Represents the sum of total current assets, long-term receivables, investment in unconsolidated subsidiaries, other investments, net property, plant and equipment and other assets.	2999
Shareholders' Equity (*BVE*)	Represents the book value of ordinary shareholders' capital investment in a company plus accumulated reserves.	3501
Year-end market Capitalisation (*MVE*)	Represents the market value of equity, i.e. Market Price at Year End × Number of Shares Outstanding	8001
Sales (*SA*)	Represents gross sales and other operating revenue less discounts, returns and allowances.	01001
Operating Income (*OI*)	Represents the difference between sales and total operating expenses.	1250
Earnings Per Share *(EPS)*	Income before extraordinary items + Preferred dividends, divided by the number of shares in issue.	05202

Table 5.2 Data definitions - Datastream

Name	Explanation	Datastream Code
Closing Price (*P*)	The last price at which an issue is traded for a specified day.	UP#S
Dividend Amount (*D*)	The dividend amount paid for the past year.	DI

5.2.1 The Worldscope conventions on labelling reporting periods

Some firms have a fiscal year that ends on a date other than 31st December. For these firms, Worldscope assigns the annual financial data to the *calendar* year in which the company's fiscal year ends; for example, fiscal years ending on 28th February 2009, 20th November 2009 and 31st December 2009 are all treated as '2009' data in Worldscope. Another convention is that the fiscal year is determined with respect to a cut-off date of 15th January date for non-US firms. Accordingly, data for a fiscal year ending on or before 15th January are treated as the previous year's information, i.e. company data for a fiscal year ending 15th January 2009 are given as 2008, while data for a fiscal year ending 16th January 2009 are given as 2009.[37]

Given these conventions, care has to be taken when downloading all accounting data, both annual and interim, in order to ensure that the complete series is downloaded, especially when there is a change of reporting period. Furthermore, with regard to interim accounts, it is sometimes the case that second semester data is not recorded by Thomson in the interim accounting dataset, and must be collected by reference to the fiscal year-end accounts available in the annual accounts section of the database. In other words, second

[37] For US firms this story is different. The fiscal year cut-off date for allocating these companies to a calendar year is on 10th February.

semester figures are not made available as interim report downloads through Thomson, then the data must be obtained as a fiscal year-end download. Even if the second semester accounts are included as interim data, care has to be taken to verify that they are consistent with the fiscal year-end accounts, e.g. that first-half and second-half sales add up to annual sales, and that balance sheet figures are reported identically both in the second set of six-monthly accounts and in the annual accounts. Finally, it should also be noted that the default labelling used by Thomson is based on quarterly reporting conventions, and therefore defines UK interim accounts issued after the first six months as if at the end of 'quarter 2', and the second half year's accounts as if at the end of 'quarter 4'.

Table 5.3 below illustrates these issues with downloaded interim and annual balance sheets (in summarised form) for the Burberry group (BRBY).

Table 5.3
Interim and annual balance sheet data: an illustration (Burberry Group)

	Interim Accounts		*Final Accounts*
	30 September 2008	*31 March 2009*	*31 March 2009*
The quarterly convention used by Thomson One Banker	*2009-2*	*2009-4*	*2009*
The semi-annual convention used in this thesis	***2009-1***	***2009-2***	***2009***
(Pounds in millions)			
Current Assets	709.8	742.4	742.4
Total Assets	1079.4	1068.0	1068.0
Current Liabilities	531.2	546.8	546.8
Total Liabilities	530.1	524.1	524.1
Shareholders' Equity	547.2	539.3	539.3
Total Liabilities & Equity	1079.4	1068.0	1068.0

The table shows the last annual balance sheet of this company used in this study, which has a year-end date of 31st March 2009. Accordingly, it can be seen how the first-half results to 30th September 2008 may be described as 2009-1 and the second-half results to 31st March 2009 as 2009-2. Although Thomson describes them on a quarterly basis (as 2009-2 and 2009-4 respectively), the convention used throughout this study of UK *half-yearly* reporting is to use the suffixes -1 and -2 strictly to refer to the first and second halves of the reporting year.

5.2.2 Reconciling year-end data in Worldscope with interim data

Table 5.4 extends the Burberry illustration for the full period 2004-2009, and shows reported figures at the end of each six monthly accounting period and at the end of each full year. For total assets, it is again demonstrated that, as in Table 5.3 above, the second-half reporting figure is identical to the amount reported in the annual accounts. With regard to income statement and cash flow statement figures, the sum of the first semester and the second semester figures should be equal to the amount reported for the year as a whole. Table 5.4 shows this to be correct, with the sales amounts taken from the interim income statements reconciling to the annual figure, and similarly with respect to the net cash flow taken from the cash flow statements. For instance, at 31st March 2009, second-half sales are 662.4, which, together with the first-half sales to 30th September 2008 of 539.1, sum to the annual reported sales of 1021.5.

As will be discussed below, an important part of the data validation process for this study is to ensure that these seemingly obvious relationships hold, as it is found that there

exist unexplained differences within commercial databases that render the data for some companies unusable.

Table 5.4

Reconciling interim and year-end data of the Burberry Group
(Pounds in millions)

Period	Interim Report Date	Year-end Report Date	Total Assets		Sales		Operating Cash Flow	
			Interim	Year-end	Interim	Year-end	Interim	Year-end
2004-1	30/09/2003		593.1		321.3		25.4	
2004-2	31/03/2004	31/03/2004	613.6	613.6	354.5	675.8	138.3	138.3
2005-1	30/09/2004		665.3		347.5		19.4	
2005-2	31/03/2005	31/03/2005	663.8	663.8	368.0	715.5	130.7	130.7
2006-1	30/09/2005		648.2		354.9		9.3	
2006-2	31/03/2006	31/03/2006	655.5	655.5	388.0	742.9	106.4	106.4
2007-1	30/09/2006		692.8		392.0		13.6	
2007-2	31/03/2007	31/03/2007	725.1	725.1	458.3	850.3	113.8	113.8
2008-1	30/09/2007		780.1		449.1		-15.4	
2008-2	31/03/2008	31/03/2008	923.7	923.7	546.3	995.4	45.4	45.4
2009-1	30/09/2008		1079.0		539.1		34.9	
2009-2	31/03/2009	31/03/2009	1068.0	1068.0	662.4	1201.5	209.8	209.8

Whilst a large number of companies have a fiscal year which coincides with the calendar year, many other companies have a fiscal year-end date on a date other than 31st December. Normally, the year to which Worldscope assigns financial data is the calendar year in which the company's fiscal year ends, so fiscal years ending 28th March 2009 or 31st December 2009 are both treated as '2009' on Worldscope. This convention has been followed in assigning the interim periods in the first column. Hence, the year ended 31 March 2009 is considered as '2009', and thus the interim accounts ended 30 September 2008 and 31 March 2009 are labelled as 2009-1 and 2009-2 respectively.

5.3 Data procedures

A key aspect of the analysis undertaken here is to form hedge portfolios in each period based on estimates using accounting data. Therefore, given the repeated rearrangement of portfolios over the study period, it is important that the data series for each firm is complete, with the downloaded data covering each period when interim reporting took place and also providing an accounting observation in each period for all variables of interest. In some cases, the fiscal year may be more or less than 12 months, mainly because of a change of reporting date, and care has been taken in downloading accounting data that all such periods are included in the initial retrieved data set in order to ensure completeness. Nevertheless, even in periods when interim reporting is known to have taken place, there are many instances where line items (even key line items, such as current assets, or sales) are not given in the downloaded data (i.e. the cell is blank). Instead of simply deleting firms for which the data series is incomplete, steps were taken to attempt to recover missing information, for instance (i) by summing components (e.g. by deducting long term assets from total assets to recreate the current assets figure, and validating this as part of the balance sheet identity where total assets equals equity plus liabilities), or (ii) by tracing missing second semester balance sheet amounts directly to the annual accounts download rather than the interim accounts download, or (iii) by reconstruction if the annual figure and the figure for only one semester is given. These procedures are discussed in greater detail below.

5.3.1 The validity of interim data

Sometimes it can found that some elements of total assets are contained in the database but the figure for total assets is missing. As already indicated above, in the case of the second semester, the figure reported as Total assets in the annual accounts may be used. For data missing from the first semester, there is usually no other option but to exclude it. In all cases, however, a simple check can be carried out to verify that the following accounting identities hold

Total assets = Total liabilities and shareholders' equity (5.1)

and

Total assets = Total liabilities + Shareholders' equity (5.2)

Where no value appears for total assets in the database, it is worth noting that the figure may be reconstructed by adding total liabilities to shareholders' equity if these latter amounts are reported. In addition, a similar check may be carried out to verify whether the sum of the various asset accounts agrees with the figure reported as total assets, i.e.

Total assets = Current assets + Total investments + Total property plant and equipment net + Other assets (5.3)

Again, it may be possible to reconstruct a missing total assets figure by inference from the above accounting identity. Similar checks have been carried out for other variables, recovering missing values where these can be supported by the appropriate accounting identity, i.e.

Current assets = Cash and investments + Total receivables + Total inventories + Prepaid expenses and taxes + Other current assets (5.4)

Current liabilities = Accounts payable + Income tax payable + Accrued payroll + Dividends payable + Other current liabilities (5.5)

Total liabilities = Total current liabilities + Long term debt + Deferred taxes + Other liabilities = Total liabilities and Shareholders' equity – Shareholders' equity = Total assets – Shareholders' equity (5.6)

Finally, when the market capitalisation is not given in the database, the following calculation is used to recover the missing value

Market capitalisation = Closing price × Number of shares outstanding (5.7)

For the key aggregates in the variable listings above in Table 5.1 and 5.2, the initial results of data enhancement are given in Table 5.5, showing the numbers of observations recovered either by backfilling the missing values, or by using other approaches. That is, (i) where a failed accounting identity could not be backfilled from other line items, as these were not all present, in such cases the firm's financial statement summaries were reviewed directly on Thomson pages, or a copy of the relevant annual report was consulted; and (ii) for sales information, if still missing at this stage, the amount for the interim period was estimated as: Interim sales = Yearly sales × (Number of days in the interim period ÷ Number of days in the annual period). When Market capitalisation for the interim period is missing and items of Closing price and Common share outstanding are available, then calculated Market capitalisation is replaced as follows: interim Market capitalisation = Closing price × Common share outstanding.

The initial sample is limited to financial statement data for full reporting periods ending in 2004 through until those ending in 2009 (i.e. from the first-half interim period 2004-1 to the second-half interim period 2009-2). As mentioned above, the reason for this selection period is that interim information is not widely available on the database before 2004. Whilst the initial download covered all UK active and inactive nonfinancial companies, i.e. 2,939 firms for up to 12 interim reporting periods, any firm-half-year with missing observations on all of the accounting variables used in the study was excluded. This resulted in 17,390 firm-half-year observations, as shown in Table 5.5. The variable with the minimum number of observations is short term debt (*SD*) with 14,324 firm-half-years, and the variable with the maximum number of observations is sales (*SA*) with 17,292 firm-half-years.

Table 5.5
Enhancing downloaded data using backfilled accounting identities and other procedures

	Downloaded data					Enhanced data		
Variable Name	Downloaded as values	Downloaded as N/A	Backfilled	Other	Corrections	Useable values	Missing values	Total
Cash and Short term Investments	15770	1620	62	0	0	15832	1558	17390
Total Receivables	15692	1698	66	0	0	15758	1632	17390
Total Current Assets	15774	1616	140	0	0	15914	1476	17390
Total Current Liabilities	15818	1572	26	0	2	15846	1544	17390
Short Term Debt and Current LTDebt	14294	3096	30	0	0	14324	3066	17390
Total Assets	15870	1520	58	0	13	15941	1449	17390
Shareholders' Equity	15870	1520	28	0	0	15898	1492	17390
Year-end Market Capitalisation	13892	3498	1250	915	0	16057	1333	17390
Sales	14500	2890	0	1393	6	17292	98	17390
Operating Income	15790	1600	0	0	2	15792	1598	17390
EPS	15979	1411	0	0	0	15979	1411	17390
Return	14478	2912	0	0	0	14478	2912	17390

As a second step, the data set was further reviewed in order to ensure completeness across the key variables required for estimation. That is, when the following criteria are satisfied, the firm-half-year is then removed from the data set even if other data items are not missing:

1a)	Total Current assets (*CA*) is missing, and all of the components of Current assets are missing, and hence *CA* cannot be recovered	-1,474
1b)	The sum of the components of Current assets is not equal to total Current assets, and more than one component of Current assets is missing, and hence *CA* still cannot be recovered	-112
2a)	Total Current liabilities (*CL*) is missing, and all of the components of Current liabilities are missing, and hence *CL* cannot be recovered	-31
2b)	The sum of the components of Current liabilities is not equal to total Current liabilities, and more than one component of Current liabilities is missing, and hence *CL* still cannot be recovered	-1,994
3)	Interim Sales (*SA*) is missing and cannot be estimated by apportioning yearly Sales	-83
4)	Year-end Market Capitalisation (*MVE*) is missing and cannot be backfilled or estimated	-341
5)	Book value of Shareholders equity (*BVE*) is missing	-25
6)	Operating income after tax (*OI*) is missing	-138
7)	Earnings per share *(EPS*) is missing	-10
8)	Return (*R*) is missing	-1,017
Total number of firm-half-years excluded		-5,225

After deducting the missing items listed above, the data set comprises 12,165 firm-half-year observations (i.e. 17,390 – 5,225).

5.3.2 Sample structure and the implications of using commercial sources

The final screening concerns the length of each accounting period, given by Worldscope#05351, which represents either the number of days in the annual reporting period under full reporting, or gives the same information for any sub-period (eg quarter, half-year) under interim reporting. In this study, the length of all interim periods is first verified against the duration between reporting dates. It is also checked that the length of semester 1 plus the length of semester 2 is equal to the fiscal year length. All data where the length for both semesters sums to between 363 and 367 days are included in the sample. As a result, a further 879 firm-half-years are removed because the total number of days in the first and second semesters [S1(days)+S2(days)] is not between 363 and 367. Thus, after excluding all nonstandard reporting periods, there remain 11,286 firm-half-years with a complete set of observations (i.e. 12,165 – 879). In the final steps, firms are excluded which do not have data available for both semesters 1 and 2 in any one reporting year, following which the sample is reduced to 9,490, and the remaining firms are then checked to ensure that there is a complete series of interim reports, from the first available half-year results to the year-end in which the last interim reporting takes place, following which the total number of firm-half-years is reduced to 8,172 observations.

The distribution of these complete available series from start period to end period is given in Table 5.6 below. This table shows the number of firms that have data for both (the first and second semesters) and also have complete series data. Therefore, 1,318 firm interim period observations are excluded from the sample.

Table 5.6

Number of interim accounting periods sampled, by start and end of series

	START						
END	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	***Total***
2004	2	0	0	0	0	0	**2**
2005	24	6	0	0	0	0	**30**
2006	12	24	26	0	0	0	**62**
2007	136	66	100	116	0	0	**418**
2008	230	168	180	180	98	0	**856**
2009	2,292	1,260	1,104	1,122	840	186	**6,804**
Total	**2,696**	**1,524**	**1,410**	**1,418**	**938**	**186**	**8,172**

Note. For the research period 2009-2010, the year specified in the top row is the first year of interim reporting, and the year specified in the left-hand column is the last year of interim reporting. For example, 2 companies start interim reporting and also finish in 2004, and 6,583 companies start in 2004 and finish in 2009.

Finally, after using initial observations in the lagging operation, the number of useable firm-half-years comprising the estimation sample comprises 6,917 firm-half-years (see Table 5.7).

Table 5.7
Sample selection of UK companies

Interim period:	***2004-1***	***2004-2***	***2005-1***	***2005-2***	***2006-1***	***2006-2***	***2007-1***	***2007-2***	***2008-1***	***2008-2***	***2009-1***	***2009-2***	***Total***
Firm-half-years with no missing values	322	756	500	920	700	1,097	1,006	1,241	1,192	1,242	1,149	1,161	**11,286**
Data available for both semesters 1 and 2	319	319	497	497	692	692	988	988	1,153	1,153	1,096	1,096	**9,490**
Complete series (full sample)	240	240	406	406	603	603	872	872	1,020	1,020	945	945	**8,172**
Data after lag operations (estimation sample)		240	239	406	397	603	582	872	761	1,020	852	945	**6,917**

Note. UK semi-annual observations between Jan 2004 and Dec 2009 are presented in the above table. First, financial firms have been taken out of the sample. Second, all missing values associated with the estimation sample result in exclusions. Third, after scaling the lagged data, truncation is performed in order to take the extreme values out of the estimation sample.

In the Thomson One Banker database, the main industry classifications are GISC, ICB and GIC, with industry classification generally being based on the dominant contribution to net sales or revenues. The General Industry Classification (GIC) provides the greatest coverage, i.e. 4,051 firms. The Industrial Classification Benchmark (ICB) covers 2,404 firms, and the Global Industry Classification Standard (GISC) covers the lowest number of firms, 1,472. In the present study, the General Industry Classification (GIC) has been used for sector identification since it gives the required information on the largest number of firms, although the sector classifications are relatively basic, i.e. Industrial (01), Utility (02), Transportation (03), Banks (04), Insurance (05) and Other Financial (06). Financial firms (04-06) are excluded as their revenues and balance sheets are not comparable with those of other firms. Furthermore, the interest of the present study is in working capital accruals, and the accrual generating process is known to be considerably different in financial firms (Peasnell et al., 2000).

In every semester from January 2004 to December 2009, all firms are included in regression analyses based on the following variables: the natural logarithm of the market value of equity (*SIZE*), the book-to-market value (*BM*), the previous six months' returns 1-6 (*LSR*), the future growth in sales from months 1 to 6 of the current period (sales growth), the current discretionary current accruals (*DACC*) from months 7 to12, and standard unexpected earnings (*SUE*) from months 7 to12. Total assets are lagged by 6 months compared to current accruals, and the change in sales is measured at six-monthly intervals.

5.4 Definition of variables

This section describes the definition of data used to test the hypotheses presented in the previous chapter. As shown in the literature review, both earnings management and discretionary accruals have been studied extensively.

5.4.1 Discretionary and non-discretionary accruals

Kothari et al. (2005) find evidence to compare the effectiveness of performance matching, versus a regression-based approach; they estimate the performance-matched[38] modified-Jones model of discretionary accruals. They add return on assets (*ROA*) into the models as an additional discretionary accrual measure. For managerial control purposes, accruals are categorised into current and non-current. In addition, the researchers divide accruals into two sections: total and working capital accruals (current accruals). They estimate discretionary accruals in the following way: total accruals are the change in non-cash current assets minus the change in current liabilities; they exclude the current portion of long-term debt (minus depreciation and amortization) and scale the whole by lagged total assets. Working capital accruals (current accruals) are calculated by taking the sum of differences in inventory, accounts receivable and other current assets, less the sum of changes in accounts payable, income taxes payable and other current liabilities. In general,

[38] Kothari et al (2005) provide properties of discretionary accruals adjusted for a performance-matched firm's discretionary accrual, where matching is on the basis of a firm's return on assets and industry member ship. Their reasons to use *ROA* as the matching variable as opposed to other candidates (e.g., size, earnings growth, earnings yield, market-to-book, etc.). They provide a performance-matched discretionary accruals model and show that the performance-matched model performs better than the modified Jones model. They match each firm year observation and year with the closest return on assets in the current year, *ROA* (net income divided by total assets). The existing literature on the accrual-based anomaly is based on the performance-matched model.

working capital accruals are considered more susceptible to management manipulation than total accruals (Kreutzfeldt and Wallace, 1986).

According to the study of Teoh et al. (1998), current accruals include short-term assets and liabilities supporting daily operations. Also, they divide total accruals into discretionary and non-discretionary based on sales growth and property, plants and equipment. Accruals generally result from sales growth, hence sales is defined as a component of earnings. They also provide evidence that for firms with abnormal discretionary current accruals, the abnormal portion is the difference between the change in non-cash current assets and the change in operating current liabilities. Their results indicate that discretionary current accruals have a stronger and more persistent influence on future returns. Therefore, consistent with earnings management, they explore the idea that high discretionary current accruals can predict post-issue long-run earnings and stock return underperformance.

Earlier research builds on working capital accruals rather than total accruals because working capital accruals are based on the connection between changes in working capital of balance sheet accounts, and accrued expenses and revenues on the income statement ((see Dechow (1994) and Kerstein and Rai (2007)). Dechow (1994) found working capital accruals especially important in helping the market resolve problems inherent in cash flows from operations.

Hribar and Collins (2002) show that the frequency and magnitude of errors introduced when using balance sheet-based accruals estimates can be substantial. Their findings have implications for studies designed to detect earnings management, the estimation of discretionary and nondiscretionary accruals, and the mispricing of these

accruals components. Among the definitions of current accruals, following the modified Jones model (1991) and the methodology developed by Teoh et al. (1998b) and documented by Wie and Xie (2008), current accruals for a firm *i* in month *t* (CA^i_t) are calculated as follows [39]:

$$ACC_t = \frac{\Delta(CA_t - CSI_t) - \Delta(CL_t - STD_t)}{TA_{t-1}} \quad (5.11)$$

Where:

ACC_t : Current accruals;

CA_t : Total Current assets (WS#06615);

CSI_t : Cash and Short term investments (WS#02001);

CL_t : Total Current liabilities (WS#03101);

STD_t : Short term debt and Current portion of long term debt (WS#03051);

TA_{t-1} : Total assets (WS#02999) from the last period;

Δ : the six-monthly change in a variable.

According to this model, normal or non-discretionary accruals are functions of designated factors or drivers. The components of accruals not explained by these drivers are defined as discretionary (abnormal). As mentioned in section 5.4.1, total accruals are modelled as a function of the change in sales or revenue and gross property, plant and equipment by Jones (1991).

[39] Early research expresses concern about measuring accruals as change in balance sheet accounts introduced by measurement error into total accruals, primarily as a result of mergers, acquisitions and discontinued operations (Collins and Hribar, 1999). Collins and Hribar demonstrate that in the Jones (1991) model, the error in total accruals measured through the balance sheet approach is unlikely to be correlated with the assumed drivers of accruals, resulting in the measurement error being captured entirely by the residual or discretionary accruals estimate.

This study focuses on discretionary current accruals. The idea behind this is that long-term accruals such as depreciation are unlikely to be an effective means of managing earnings because of their visibility, and the ability of the market to observe and unwind the earnings implications of any attempt to manipulate them (Young, 1999; Gore et al., 2002).

According to the accruals literature, to obtain cross-sectional and time-series comparisons between firms, all variables are deflated by the lag of total assets.

Following Dechow, Sloan and Sweeney (1995), accruals are related to sales changes. In this thesis, discretionary current accruals are used for measuring earnings management. For calculating the discretionary current accruals for firm *i* in the six-month *t* the following formula can be used (see Teoh et al., 1998a)[40]:

$$ACC_t = \alpha_1 \frac{1}{TA_{t-1}} + \alpha_2 \frac{\Delta SA_t - \Delta AR_t}{TA_{t-1}} + \varepsilon_t \qquad (5.12)$$

Where:

ACC_t : total current accrual for firm *i* and six month *t*;

ΔSA_t : change in Sales (WS#01001) for the six-month period;

ΔAR_t : accounts receivable (WS#02051)

TA_{t-1} : total asset from the previous six months.

Thus, discretionary total current accruals are computed as follows:

$$DACC_t = \varepsilon_t;$$

$$DACC_t = ACC_t - \left(\alpha_1 \frac{1}{TA_{t-1}} + \alpha_2 \frac{\Delta SA_t - \Delta AR_t}{TA_{t-1}}\right) = \varepsilon_t \qquad (5.13)$$

[40] Teoh et al. (1998a) subtract the increase in trade receivables from change in sales in calculating discretionary accruals to allow for possibility of credit sales manipulation by the issuer. As an example, they show by allowing generous credit policies to obtain high sales prior to the offering.

$DACC_t$ = discretionary total current accruals = $\mathcal{E}_t$ (5.14)

If discretionary accruals are deducted from current accruals, the result will be non-discretionary accruals as follows:

$NDACC_t$=ACC_t - $DACC_t$= ACC_t - $\mathcal{E}_t$ (5.15)

In this study, any observation that cannot provide sufficient information to be used in the calculation of the mentioned variables is excluded.

The specification of the discretionary accrual model assumes critical importance in making unbiased inferences. Earlier researchers (Dechow et al., 1995) show that Jones-models reject the null hypothesis of no earnings management in firms with extreme financial performance. For these reasons, Kothari et al. (2005) perform a simulation to show that performance matching of return on assets helps to improve the level of reliability of earnings management tests. Nevertheless, returns on assets and growth are highly correlated with discretionary accruals; this fact is documented by McNichols (2000) who provides evidence suggesting the matching of return on assets may not be adequate. In the modified Jones model quarterly data includes changes in quarterly sales as an explanatory variable. Therefore, McNichols' study measures sales growth rate as the growth in sales from the interim period. To adjust the effect of sales growth, this measure can be added to the modified Jones model Equation[41]. The theory behind this model suggests that there is a

[41] The discretionary accruals can be estimated using the Modified Jones Model suggested by Dechow et al. (1995) as an improvement in the original Jones model (Jones 1991). In this model, discretionary accruals are the residuals of the following model: $TA_{it}/A_{it-1} = \alpha_i \frac{1}{A_{it-1}} + \beta_{1i} \frac{\Delta AREV_{it} - \Delta REC_{it}}{A_{it-1}} + \beta_{1i} \frac{PPE_{it}}{A_{it-1}} + \varepsilon_{it}$

where TA_{it} is the total accruals of firm i in year t, $AREV_{it}$ is the change in revenues of firm i between years t and t-1, ΔREC_{it} is the change in receivables of firm i between years t and t-1, PPE_{it} is the level of property, plant, and equipment of firm i in year t and A_{it-1} is the total assets of firm i at the end of year t-1. The regression terms are deflated by A_{it-1} to adjust the size effects. It is assumed that A_{it-1} is non-stochastic.

linear link between sales growth and quarterly accruals. Subsequently, there may be interaction effects between returns on assets and sales growth. So, Kothari et al. (2005) examine the underlying nonlinear relationship between discretionary accruals and return on assets. Their findings show that the matched firm approach works better than the linear regression approach[42]. Related research by Gong et al. (2008b) uses five portfolios by classifying observations into quintiles based on their returns on assets. The portfolios are formed in the same quarter in the previous year as recorded by the performance discretionary accrual. Then they calculate the difference of the discretionary accruals for the sample firm and the median discretionary accrual of the matched portfolio. The current study reports a parallel method to assess the measures with interim period data.

Previous studies explaining the relationship between discretionary accruals and stock returns use the static power of discretionary accruals to achieve a more exact measurement of earnings management (Dechow et al., 1995). Recent studies show sales and earnings demonstrate the performance of each firm. According to Kotari et al. (2005), past returns on assets (ROA) is an independent variable in the cross-sectional regression to estimate discretionary accruals. Thus, in this study, the *ROA*-adjusted discretionary is included as current accruals as follows:

$$ACC\_1_t = \alpha_1 \frac{1}{TA_{t-1}} + \alpha_2 \frac{\Delta SA_t - \Delta AR_t}{TA_{t-1}} + ROA_{t-1} + \varepsilon_t \qquad (5.16)$$

[42] Kothari et al. (2005) match firms on ROA in period t or t_{-1} to obtain performance-matched Jones model discretionary accruals. They add the lagged year's ROA to the Jones Model (Modified-Jones model) as an additional explanatory variable.

Equation (5.16) can be adjusted for the seasonality effect, i.e. the change in realised sales for semester (*t*) since last semester (*t*-1) and the change in realised sales for semester (*t*) since same semester last year (*t*-2). In this case, the equation for accruals estimation is defined as follows[43]:

$$ACC\_1_t = \alpha_1 \frac{1}{TA_{t-1}} + \alpha_2 \frac{(SA_t - SA_{t-1}) - (AR_t - AR_{t-1})}{TA_{t-1}} + \alpha_3 \frac{(SA_t - SA_{t-2}) - (AR_t - AR_{t-2})}{TA_{t-1}} + \alpha_4 \frac{OI_t}{TA_{t-1}} + \varepsilon_t \qquad (5.16A)$$

Given Equation 5.11 both current nonfinancial assets and liabilities for semesters 1 and 2 (interim periods) are calculated and presented in Table 5.8, for BBA Aviation PLC. Increases and decreases in Current Non-financial assets ($NACC_t$) represent the current accruals before deflation for the periods from 2004-1 to 2004-2. After deflation current accruals (0.037), is the sum of non-discretionary current accruals and discretionary current accruals. When non-discretionary current accruals from the result of regression 5.16 (0.065), are deducted from deflated current accruals then the result is discretionary current accruals (-0.027).

Table 5.9 displays the estimation of discretionary current accruals from the interim report BBA Aviation PLC. Table 5.9 contains actual data, and an estimation of certain variable. The estimated variables are: ($1/TA_{t-1}$), is inverse lag of total assets; (ΔSA_t - $\Delta AR_t)/TA_{t-1}$ is changing in sales and account receivable deflated by lag total assets; (ROA_{t-1}) is return on assets. The difference between the real value and the estimated value creates the

[43] Note that, for the yearly model, *t* is interpreted as the financial year, not the half yearly period.

numbers presented in the prediction column. For instance, the prediction for the regression variable *STA* is calculated as follows;

0.035= -0.045× -0.775

Non-discretionary current accrual (*NDACCt*) in Table 5.9 is (0.0645). This figure results from the prediction of the following items: inverse lag of total assets, change in sales and accounts receivable, return on assets and intercept[44]. The result of Table 5.8 is confirmed by the result of Table 5.9 for nondiscretionary current accruals.

[44] All related items to calculate current accruals are deflated by lag of total assets

Table 5.8
Computing discretionary current accruals: an illustration (BBA Aviation PLC)

(Pounds in millions)	**Variables**	**Data**	**Increase/decrease**
Current non-financial assets, t-1	CA_{t-1}- CSI_{t-1}	461.100	(+)
Current non-financial liabilities, t-1	CL_{t-1}- STD_{t-1}	306.200	(+)
Current non-financial assets, t	CA_t- CSI_t	561.000	(+)
Current non-financial liabilities, t	CL_t- STD_t	344.400	(+)
Net current non-financial assets, t-1	$NCNFA_{t-1}$	154.900	(+)
Net current non-financial assets, t	$NCNFA_t$	216.600	(+)
Change in current non-financial assets	$NACC_t$	61.700	(+)
Deflator: Total assets	TA_{t-1}	1,665.400	
Deflated current accrual	ACC_t	0.037	(+)
Predicted, i.e. nondiscretionary, current accrual	$NDACC_t$	**0.065**	(-)
*Discretionary current accrual**	$DACC_t$	**-0.027**	(+)

Note, If the accrued revenues and deferred expenses are more than accrued expenses and deferred revenues, then income will increase. In other words, if accrued expenses and deferred revenues are more than accrued revenues, then deferred expenses income will decrease.

* $NDACC_t$ is the nondiscretionary accrual that is a predicted variable and resulting from equation 5.16.

Increases and decreases in current non-financial assets and liabilities are calculated for the periods from 2004-1 to 2004-2

Table 5.9
The estimation of the discretionary accruals equation: (BBA Aviation PLC)

(Pounds in millions)	**Variables**	**Reg. Variable**	**Actual data**	**Estimation**	**Predicted**
Total asset, t-1	TA_{t-1}		1,665.400		
Inverse lag of total assets	$1/TA_{t-1}$	*FTA*	0.0000000006005	2985.124	**0.0000**017925670
Sales, t	SA_t		699.900		
Sales, t-1	SA_{t-1}		675.100		
Changing in sales	ΔSA_t		24.800		
Current accounts receivables, t	AR_t		341.700		
Current accounts receivables, t-1	AR_{t-1}		242.200		
Change in accounts receivable	ΔAR_t		99.500		
Change in sales and accounts receivable	$\Delta SA_t - \Delta AR_t$		74.700		
Total assets, t-1	TA_{t-1}		1,665.400		
Chang in sales and accounts receivable; deflated	$(\Delta SA_t - \Delta AR_t)/TA_{t-1}$	*STA*	-0.045	-0.775	**0.0347**459689444
Operating income	*OI*		49.100		
Total assets (lag)	TA_{t-1}		1,665.400		
Return on assets	ROA_{t-1}	*ROA*	0.0000000294824	0.119	**0.0034**993611865
Intercept	*Intercept*	*INT*	1.000	0.026	**0.0262**529000000
Nondiscretionary accruals	*Prediction: NDACCt*				**0.0645**000226979

***** $NDACC_t$ is predicted nondiscretionary accruals and it results from equation 5.16. The table above, illustrates deflated current accruals are divided into discretionary and nondiscretionary accruals and $NDACC_t$ is predicted and confirmed by result of the regression in Table 5.10.

5.4.2 The systematic character of accruals in interim reporting

In order to investigate in detail how the information in Worldscope relates to the source of the dataset, i.e. the accounts published by each company, a case study of the Burberry group PLC is given. The regularity in accruals is so evident that it raises questions:

(a) whether or not the source data is compiled for interim and final accounts on the same basis (they would differ systematically if a component of current assets or current liabilities is allocated as long term in the interim accounts but not in the final accounts, e.g. a future payment on a liability may be due in more than one year at the interim date but in less than one year at the accounting year end date);

(b) whether or not accruals and deferrals are made in full in the interim and final accounts e.g. they would differ systematically if the tax charge for the year is only calculated on the final profit and not on the interim profit.

The Worldscope variables used in computing the change in net current assets for Burberry PLC are in Table 5.10. Figure 5.1 shows the time series of (non-financial) current assets *CA* and current liabilities *CL* are characterised by their upward trend (the firm has doubled in size in five years), and there is also some seasonality in current assets whereby an increase at the interim date is followed in most years by a decrease at the year-end.

Figure 5.1 Time series of non-financial current assets and current liabilities

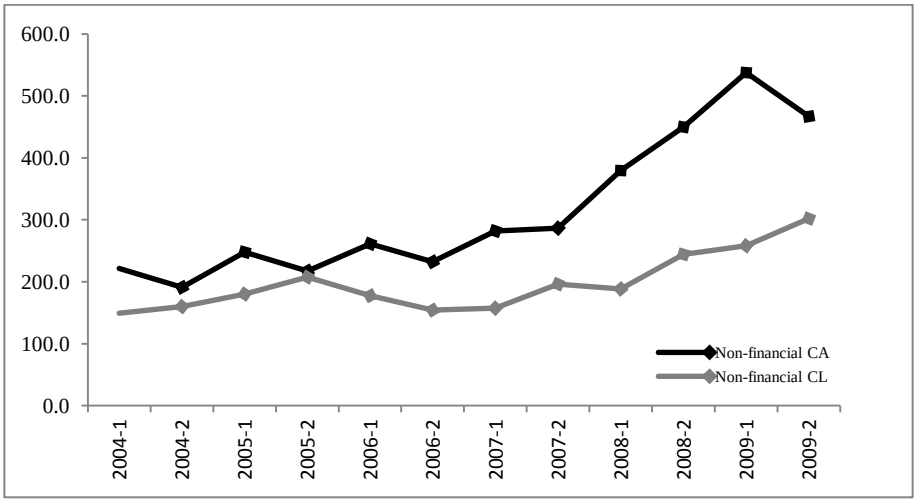


Table 5.10
Current assets and liabilities for Burberry group PLC

Period	***FYD***	***TCA***	***CSI***	***CA***	***TCL***	***STD***	***CL***
2004-1	30/09/2003	295.5	73.6	221.9	149.6	0.1	149.5
2004-2	31/03/2004	350.0	158.7	191.3	161.2	0.8	160.4
2005-1	30/09/2004	391.4	143.5	247.9	181.1	0.5	180.6
2005-2	31/03/2005	387.7	169.9	217.8	207.8	0.0	207.8
2006-1	30/09/2005	348.9	87.6	261.3	178.0	0.0	178.0
2006-2	31/03/2006	348.9	116.5	232.4	255.8	101.2	154.6
2007-1	30/09/2006	390.2	108.0	282.2	314.9	157.4	157.5
2007-2	31/03/2007	423.7	136.7	287.0	330.4	134.2	196.2
2008-1	30/09/2007	481.9	102.3	379.6	376.0	187.2	188.8
2008-2	31/03/2008	588.4	138.6	449.8	436.2	191.8	244.4
2009-1	30/09/2008	709.8	172.1	537.7	531.2	272.7	258.5
2009-2	31/03/2009	742.4	275.5	466.9	546.8	244.7	302.1

2004-1 is the interim report and 2004-2 is the final report and so on. *TCA* is total current assets, *CSI* is cash short term investments, *CA* is current accrual (nonfinancial), *TCL* is total current liabilities, *STD* is short term debt, and CL is current liabilities (non-financial). *FYD* is the Fiscal year-end of company.

The short term net accrual represents the accrued revenues and deferred costs *less* the accrued costs and deferred revenues that are expected to flow into earnings. This is equivalent to the change in net current non-financial assets, and is deflated by the opening total assets for the period to give the accrual variable *ACC* used in our analysis (see figure 5.2). This calculation can be seen in Table 5.11 as follows:

Table 5.11

Computing the accrual variable for Burberry

Period	***FYD***	***ΔCA***	***ΔCL***	***Δ(CA-CL)***	TA_{t-1}	***ACC***
2004-2	31/03/2004	-30.6	10.9	-41.5	593.1	**-0.06997**
2005-1	30/09/2004	56.6	20.2	36.4	613.6	**0.05932**
2005-2	31/03/2005	-30.1	27.2	-57.3	665.3	**-0.08613**
2006-1	30/09/2005	43.5	-29.8	73.3	663.8	**0.11042**
2006-2	31/03/2006	-28.9	-23.4	-5.5	648.2	**-0.00849**
2007-1	30/09/2006	49.8	2.9	46.9	655.5	**0.07155**
2007-2	31/03/2007	4.8	38.7	-33.9	692.8	**-0.04893**
2008-1	30/09/2007	92.6	-7.4	100.0	725.1	**0.13791**
2008-2	31/03/2008	70.2	55.6	14.6	780.1	**0.01872**
2009-1	30/09/2008	87.9	14.1	73.8	923.7	**0.07990**
2009-2	31/03/2009	-70.8	43.6	-114.4	1079.4	**-0.10598**

2004-1 is the interim report and 2004-2 is the final report and so on. *FYD* is the Fiscal year-end of company. *ΔCA* is the changes in current assets, *ΔCL* is the changes in current liabilities, *Δ(CA-CL)* is differences between changes in current assets and current liabilities, TA_{t-1} is pervious total assets, *ACC* is current accrual (nonfinancial).

Figure 5.2 Changes in non-financial current assets and current liabilities for Burberry group PLC.

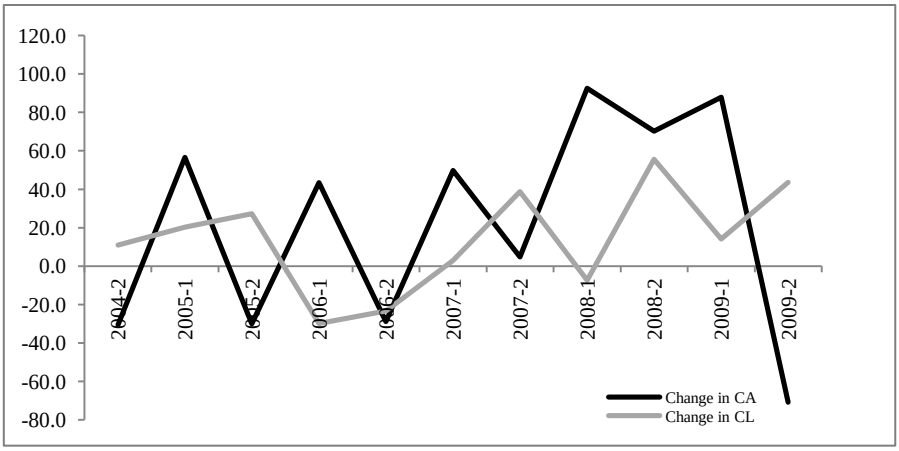


Figure 5.3 Deflated accrual and linear prediction for Burberry group PLC

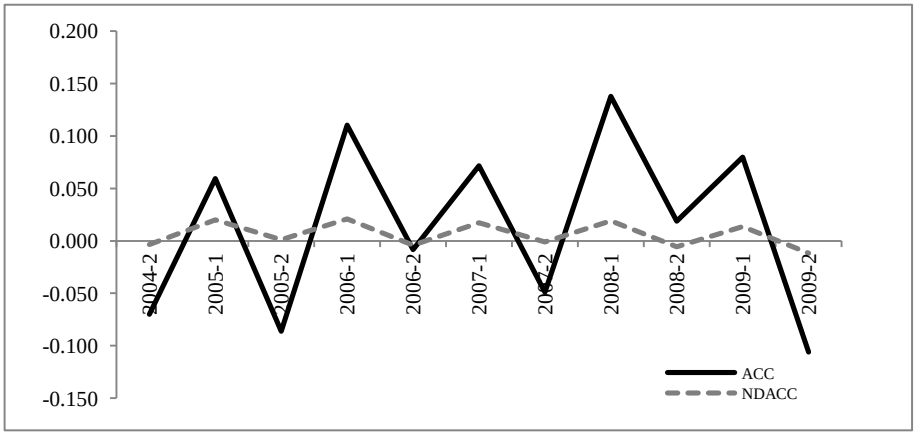


Figure 5.2 demonstrates that the time series pattern of working capital increases (which would push profits up at the interim date) and working capital decreases (which would pull profits back down at the year-end) is now reflected throughout in current assets (interim increases), and is also evident in the last two years in current liabilities (interim decreases). The effect on ACC (the deflated accrual variable) is similarly striking (see Figure 5.3). The forecast accrual, using the modified predictor based on current changes in realised sales after controlling for return on assets, captures the time series pattern. An interesting aspect

of this analysis, in the case of Burberry, is that the pattern of reversals continues throughout the period 2004-2009, including the financial crisis in the last two years. To investigate the behaviours of both discretionary and non-discretionary current accruals, five more examples of firm's accruals information are presented in Table 5.12. The firms are as follows;[45]

1. Rolls-Royce Group PLC,
2. BAE Systems PLC,
3. Castings PLC,
4. National Grid PLC and
5. Rentokil Initial PLC.

Table 5.12 shows the main information about the variables as follows: variable *NFCA* is the net financial current assets and calculated by differences between total current assets (WS#06615) and cash and short term investments (WS#02001).

Net financial current liabilities *(NFCL)* is calculated by taking the difference between total current liabilities (WS#03101) and short term debt and the current portion of long term debt (WS#03051). The variable Δ*NFCA* is the change in non-financial current asset and Δ*NFCL* is the change in non-financial current liabilities. The increase (decrease) in net current non-financial assets shows current accruals before deflation. *ACC* is deflated current accruals used as current accruals in this study. The predicted amount of nondiscretionary current accruals that comes from the OLS regression is labelled *NDACC.*

Figure 5.4 illustrates the data for these selected companies; the data being change in non-financial assets, and liabilities and nondiscretionary accruals during the interim periods

[45] All firms are randomly selected from the UK listed companies with total assets higher average for interim period 2004-2 to 2009-2.

starting from 2004-2 ending to 2009-2. Also for each firm three graphs are presented; the first graph shows non-financial assets and liabilities, the second graph displays net financial assets and liabilities and current accruals before any deflation; and, finally, the third graph presents the behaviour of deflated current accruals and nondiscretionary accruals.

As mentioned before, *NFCA* illustrates the net financial current assets and that comes from differences between total current assets and cash and short-term investments. *NFCA* and *NFCL* of all companies increase during the selected period; specially Rolls-Royce Group PLC and Castings PLC. In the second graph, changes in *NFCA* and *NFCL* and net current accruals are presented. Rolls-Royce Group PLC and BAE Systems PLC have a same pattern of $\Delta NFCA$ *and NACC* (net current accrual before deflation). In the third graph, deflated current accruals and non-discretionary accruals (predicted accrual) are shown. Interestingly, in all companies, the predicted accrual has similar pattern with current accrual. The unexplained part of current accruals is discretionary accruals used by managers in earnings management.

Table 5.12

Accruals information for 5 companies during interim periods 2004-2 to 2009-2 (Pounds in millions)

Variable	Entity name	2004-2	2005-1	2005-2	2006-1	2006-2	2007-1	2007-2	2008-1	2008-2	2009-1	2009-2
	Rolls-Royce Group PLC	2438	3875	2713	3576	3091	4223	3975	5553	5179	6409	5064
	BAE Systems PLC	2669	3166	2382	2744	2651	3344	3702	4603	4771	4612	4668
NFCA	Castings PLC	18.224	18.102	22.24	22.127	25.725	23.311	28.102	25.779	29.642	30.597	21.255
	National Grid PLC	1679	1721	1646	1416	2052	1375	1344	2357	2724	2945	3234
	Rentokil Initial PLC	496.1	604.2	504.3	482.4	529.5	648.3	514.8	547.4	578.8	509.8	484.8
	Rolls-Royce Group PLC	-2570	-2927	-3232	-3288	-3664	-3764	-4720	-5167	-8550	-6401	-6173
	BAE Systems PLC	-6565	-6712	-7746	-7511	-7608	-7833	-9255	-8950	-10617	-9799	-11540
NFCL	Castings PLC	-14.855	-12.032	-17.096	-13.029	-16.871	-14.223	-17.095	-15.717	-20.405	-18.448	-12.918
	National Grid PLC	-2807	-2392	-2892	-1958	-2841	-2542	-2329	-2614	-3240	-3641	-3773
	Rentokil Initial PLC	-763.1	-683.9	-681	-654.4	-683.7	-694.4	-653.5	-665.2	-739.2	-668.5	-715.8
	Rolls-Royce Group PLC	-1022	1437	-1162	863	-485	1132	-248	1578	-374	1230	-1345
	BAE Systems PLC	-687	497	-784	362	-93	693	358	901	168	-159	56
ΔNFCA	Castings PLC	2.604	-0.122	4.138	-0.113	3.598	-2.414	4.791	-2.323	3.863	0.955	-9.342
	National Grid PLC	-240	42	-75	-230	636	-677	-31	1013	367	221	289
	Rentokil Initial PLC	26	108.1	-99.9	-21.9	47.1	118.8	-133.5	32.6	31.4	-69	-25
	Rolls-Royce Group PLC	-95	-357	-305	-56	-376	-100	-956	-447	-3383	2149	228
	BAE Systems PLC	-961	-147	-1034	235	-97	-225	-1422	305	-1667	818	-1741
ΔNFCL	Castings PLC	-4.438	2.823	-5.064	4.067	-3.842	2.648	-2.872	1.378	-4.688	1.957	5.53
	National Grid PLC	-408	415	-500	934	-883	299	213	-285	-626	-401	-132
	Rentokil Initial PLC	-80.2	79.2	2.9	26.6	-29.3	-10.7	40.9	-11.7	-74	70.7	-47.3
	Rolls-Royce Group PLC	-1117	1080	-1467	807	-861	1032	-1204	1131	-3757	3379	-1117
	BAE Systems PLC	-1648	350	-1818	597	-190	468	-1064	1206	-1499	659	-1685
NACC	Castings PLC	-1.834	2.701	-0.926	3.954	-0.244	0.234	1.919	-0.945	-0.825	2.912	-3.812
	National Grid PLC	-648	457	-575	704	-247	-378	182	728	-259	-180	157
	Rentokil Initial PLC	-54.2	187.3	-97	4.7	17.8	108.1	-92.6	20.9	-42.6	1.7	-72.3
	Rolls-Royce Group PLC	-0.146	0.141	-0.165	0.091	-0.091	0.101	-0.117	0.099	-0.309	0.232	-0.075
	BAE Systems PLC	-0.114	0.023	-0.099	0.032	-0.01	0.027	-0.058	0.061	-0.076	0.027	-0.075
ACC	Castings PLC	-0.026	0.036	-0.012	0.049	-0.003	0.003	0.022	-0.011	-0.009	0.029	-0.04
	National Grid PLC	-0.027	0.02	-0.023	0.028	-0.01	-0.015	0.007	0.026	-0.007	-0.005	0.004
	Rentokil Initial PLC	-0.032	0.106	-0.059	0.003	0.013	0.061	-0.049	0.011	-0.02	0.001	-0.036
	Rolls-Royce Group PLC	-0.031	0.031	-0.025	0.017	-0.016	0.018	-0.014	0.017	-0.018	0.015	-0.012
	BAE Systems PLC	-0.018	0.013	-0.020	0.009	-0.007	0.011	-0.013	0.016	-0.018	0.004	-0.012
NDACC	Castings PLC	0.000	0.006	-0.002	0.011	0.001	0.008	-0.006	0.008	0.000	0.007	0.013
	National Grid PLC	-0.002	0.010	-0.005	0.009	-0.005	0.010	-0.001	0.009	-0.009	0.007	-0.012
	Rentokil Initial PLC	0.008	0.019	-0.004	0.017	0.002	0.009	-0.004	0.003	-0.004	-0.003	0.000

Figure 5.4 The main components of accruals and their linear prediction for five selected companies

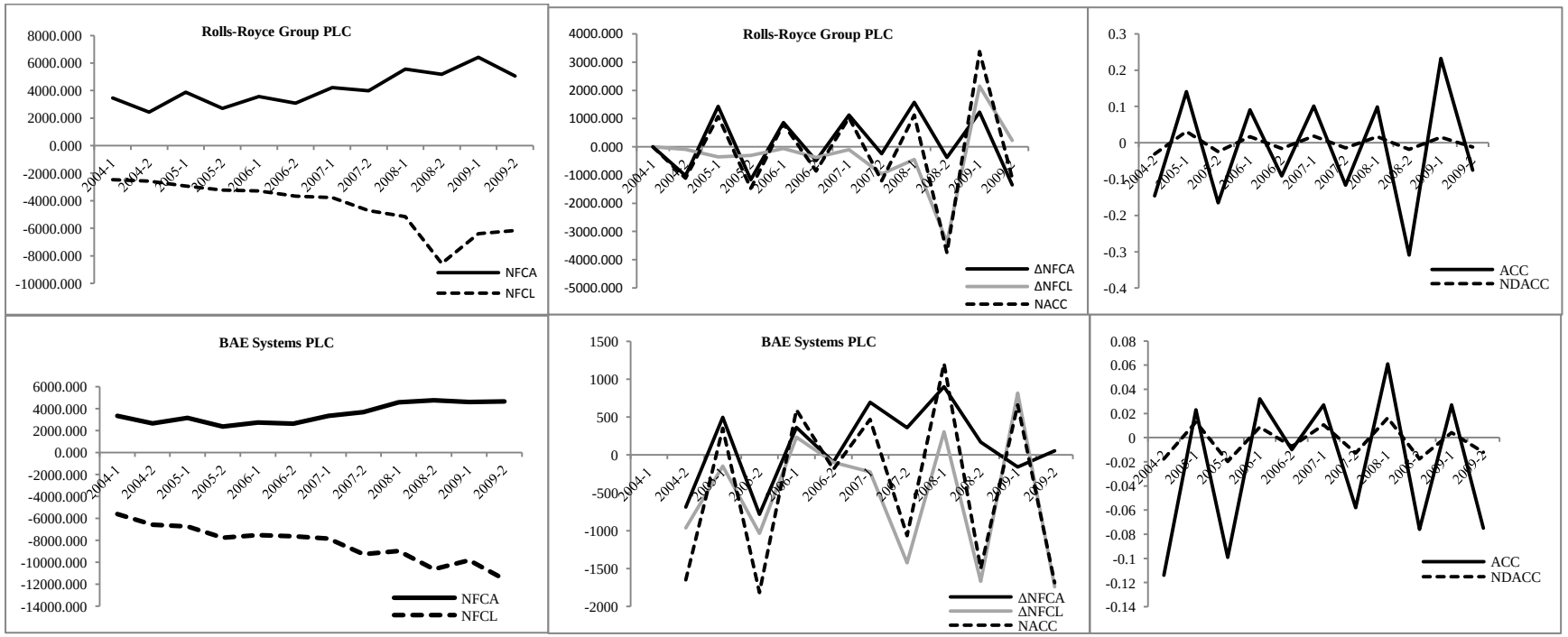
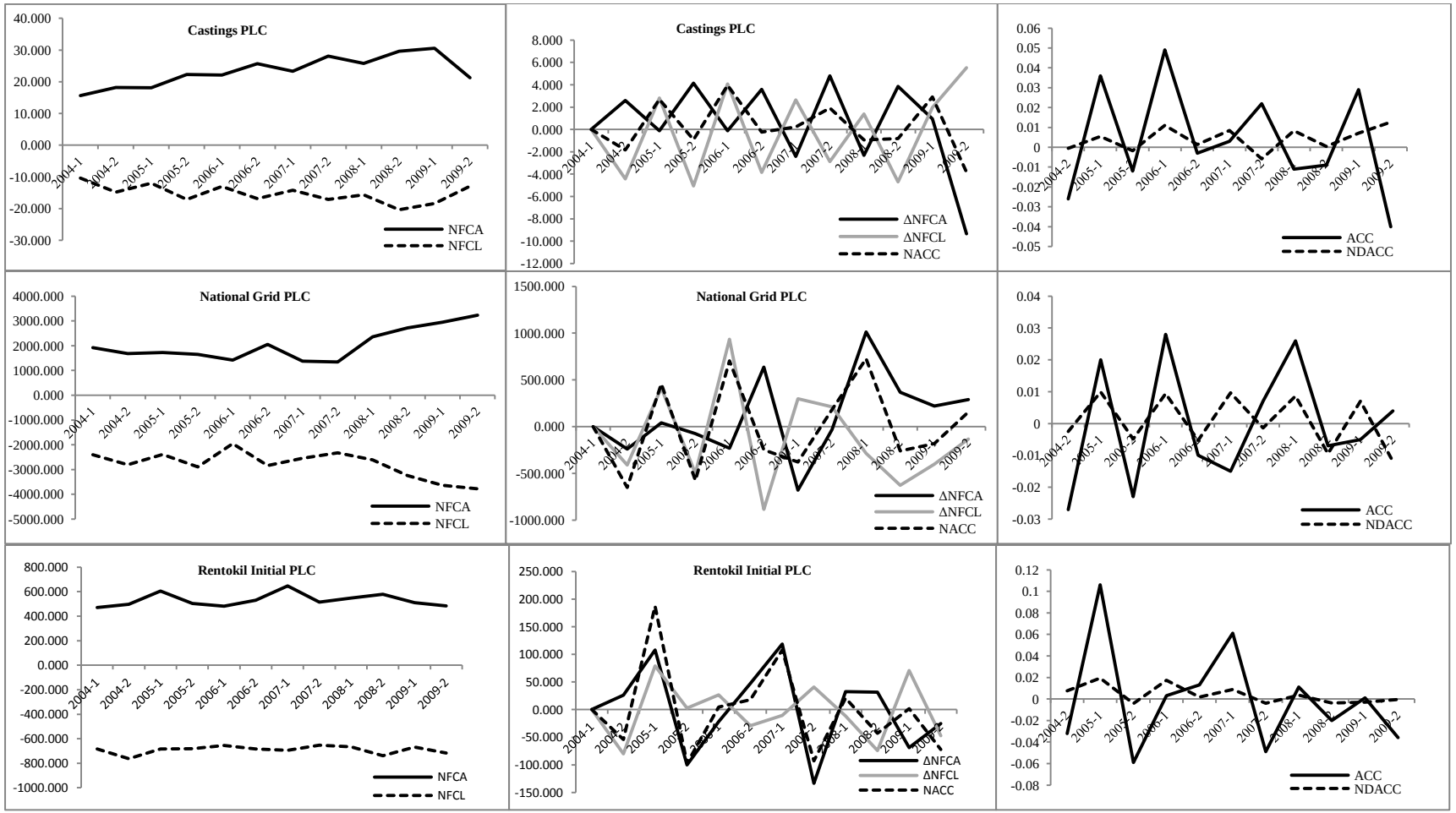


Figure 5.4 (Cont.)



5.4.3 How information in Worldscope relates to the ultimate source of dataset: case studies

This section investigates in detail whether the information in Worldscope agrees with the source data of the dataset. The accounting data for Rolls-Royce Group PLC is used as a case study. Table 5.13 shows that Worldscope reclassifies the accounting items into the overall account in the balance sheet. For example some accounts such as taxation recoverable, other financial assets and assets held for sale that are illustrated as current assets in the company balance sheet source data, are shown in other current assets in Worldscope. In contrast, prepaid expenses income tax is presented as a separate item in Worldscope.

For fiscal interim periods 30-June-04, 31-Dec-2004, 30-June 2005, 31-Dec-2005 and 31-Dec-2006, income tax payable for Rolls-Royce Group PLC is as follows: 191, 176, 209, 171 and 191 in the balance sheet (company source). However, in Worldscope these numbers are not reported; they are shifted to the other current assets account. Also, current tax liabilities for fiscal interim periods: 30-June-2008, 31-Dec-2008 and 30-June 2009 are 70, 0 and 80 in the company source, but in the Worldcope dataset that are different. Short-term debt (financial current liabilities) is sporadically reported in both Worldscope and data source. Therefore, to obtain non-financial liabilities in this study we deduct short-term debt from total current liabilities.

Table 5.14 shows the income statement items from the company source and the Worldscope database. This table shows that in the Worldscope database some items are rebalanced and reclassified into other accounts. For example in 30-June-2004 the amount of 2,460 is classified as cost of sales and other operating cost. However, this amount is

classified in Worldscope in other operating accounts. One of the items that has a large effect on non-financial liabilities is income tax payable. In some cases (see 30-June-2008), Rolls-Royce Group PLC did not show income tax in the interim period and it shifted an amount of 320 to the end of the fiscal year on 31-Dec-2008. In another case, this company shows 47 (21+26) as taxation for the interim period ending 30-June-2005. However, the amount of taxation for the year-end fiscal period is 130 (61+69). If this amount is reduced by the interim period taxation (130-47=83) the balance is the taxation for the second interim period.

Table 5.13

Comparing the section on current assets and liabilities from the source dataset with the data in Worldscope: Rolls-Royce Group PLC (Pounds in millions)

	£m	*30-June-04*	*31-Dec-04*	*30-June-05*	*31-Dec-05*	*30-Jun-06*	*31-Dec-06*	*30- June-07*	*31-Dec-07*	*30- June-08*	*31-Dec-08*	*30-Jun-09*
Source	***Current Assets***											
	Cash and cash equivalents	1,434	1,452	1,767	1,757	1,837	2,185	1,811	1,897	1,631	2,172	1,929
	Short-term investments	37	36	41	37	36	34	35	40	-	-	-
	Trade and other receivables	2,045	2,049	1,923	2,047	2,128	2,465	2,535	2,585	3,190	2,727	2,009
	Inventory	1,051	1,090	1,163	1,309	1,423	1,447	2,081	2,203	1,316	1,501	2,153
	Taxation recoverable	7	2	3	3	3	5	3	7	-	-	-
	Other financial assets	-	-	786	464	717	644	603	514	-	-	-
	Assets held for sale	-	-	-	-	22	-	-	7	-	-	-
	Current Assets - Total	**4,574**	**4,629**	**5,683**	**5,617**	**6,166**	**6,780**	**7,068**	**7,253**	**6,137**	**6,400**	**6,091**
Worldscope	***Current Assets***											
	Cash and St investments	1471	1488	1808	2258	2590	2863	2449	2451	2343	2862	3493
	Total receivables	2419	1224	2712	1234	2131	1412	2538	1616	3076	2400	3811
	Total inventories	1041	1081	1163	1309	1423	1447	1685	2203	2453	2600	2589
	Prepaid expense in-tax	-	-	-	-	-	-	-	-	-	-	-
	Other current assets	-	133	-	170	22	232	-	156	24	179	9
	Current Assets - Total	**4931**	**3926**	**5683**	**4971**	**6166**	**5954**	**6672**	**6426**	**7896**	**8041**	**9902**
Source	***Current liabilities***											
	Trade and other payables	-2,285	-2,395	-2,275	-2,689	-2,878	-3,290	-3,826	-4,326	-2,626	-2,748	-3,209
	Borrowings	-154	-207	-461	-75	-388	-400	-38	-34	-	-	-
	Other	-	-	-283	-234	-72	-37	-30	-85	-	-	-
	Current tax liabilities	-191	-176	-209	-171	-186	-191	-189	-188	-70	-	-80
	Bank overdrafts and loans	-	-	-	-	-	-	-	-	-1,486	-1,970	-2,243
	Provisions	-215	-173	-160	-138	-152	-146	-115	-121	-72	-72	-72
	Current Liabilities - Total	**-2,845**	**-2,951**	**-3,388**	**-3,307**	**-3,676**	**-4,064**	**-4,198**	**-4,754**	**-4,254**	**-4,790**	**-5,604**
Worldscope	***Current liabilities***											
	Accounts payable	-	-	-	-	2878	-	3430	778	4647	1042	-
	St debt & Current portltdeb	151	204	461	75	388	400	38	34	13	23	6
	Income taxes payable	-	-	-	-	186	-	189	188	198	184	153
	Accrued payroll	-	-	-	-	-	-	-	-	-	-	-
	Dividendspayable	-	-	-	-	-	-	-	-	-	-	-
	Other current liabilities	2475	2570	2927	3232	224	3664	145	3754	322	7324	6248
	Current Liabilities - Total	**2626**	**2774**	**3388**	**3307**	**3676**	**4064**	**3802**	**4754**	**5180**	**8573**	**6407**

Table 5.14 Comparing the income statement items in the source dataset and Worldscope; Rolls-Royce Group PLC

(Pounds in millions)

fm	***Income statement***	*30-June-04*	*31-Dec-04*	*30-June-05*	*31-Dec-05*	*30-Jun-06*	*31-Dec-06*	*30- June-07*	*31-Dec-07*	*30- June-08*	*31-Dec-08*	*30-Jun-09*
Company source	Revenue	2750	5947	3184	6603	3390	7156	3591	7435	6008	12217	7017
	Cost of sales and other operating cost	-2460	-5270	-2691	-5488	-2900	-6198	-2943	-6003	-2500	-4864	-3047
	Other operating income	-	-	-	-	38	57	40	50	57	103	37
	Commercial and administrative costs	-	-	-	-			-318	-653	-3492	-7762	-3678
	Research and development costs	-138	-288	-117	-282	-177	-370	-195	-381		-	-
	Share of profit of joint ventures	12	19	26	46	10	47	26	66	-50	-	-
	Provision for associate provision for loan	-	-	-	-	-	-	-	-	-	-430	-
	Finance cost	-	-	-	-	-	-	-	-	-49	-70	-45
	Group operating profit	164	408	402	879	361	692	201	514	-	-	-
	Profit/(loss) on sales of businesses	11	9	-1	-2	-	1	-1	-2	-	-	-
	Profit on ordinary activities before f.c	175	417	401	877	361	693	322	200	-26	-806	284
	Financial income	19	58	271	472	753	1196	416	718	-	-	-
	Financial expenses	-45	-111	-507	-872	-244	-498	-239	-497	-	-	-
	Net financing cost	-26	-53	-236	-400	509	698	177	221	-	-	-
	Profit on ordinary activitis before tax	149	364	165	477	870	1391	377	733	-	-	-
	Taxation	-41	-100					-74	-133	-	320	-80
	Taxation – UK	-	-	-21	-61	-196	-299	-	-	-	-	-
	Taxation – Overseas	-	-	-26	-69	-57	-98	-	-	-	-	-
	Profit/(loss) from conttinuing operations	-	-	-	-	-	-	-	-	-26	-486	204
	Discountinued operations	-	-	-	-	-	-	-	-	-	22	-
	Profit for the period	**108**	**264**	**118**	**347**	**617**	**994**	**303**	**600**	**-26**	**-464**	**204**
Worldscope	**Income Statement**											
	Net Sales or Revenues	2746	5939	3184	6603	3390	7156	3591	7435	4049	9082	5645
	Cost of Goods Sold	-	4527	2609	4681	2791	5296	3149	5770	3083	7022	4379
	Selling, General & Admin Expenses	-	880	-	895	-	1051	-	1034	543	1043	856
	Depreciation, Depletion & Amort.	123	252	126	243	109	231	112	233	148	310	269
	Other Operating Expenses	2514	0	117	0	0	0	0	0	0	0	0
	Operating Income	109	280	332	784	313	578	135	398	275	707	141
	Extraordinary Credit – Pre tax	-	-	-	0	0	740	0	251	135	0	0
	Extraordinary Charge – Pre tax	-	33	-	11	23	0	24	0	60	2484	71
	Interest Expense On Debt	24	106	50	104	169	100	50	89	36	69	92
	Pretax Equity In Earnings	-	-	-	-	10	-	26	-	-	-	-
	Other Income/Expense - Net	30	80	-143	-303	739	44	290	24	42	-179	148
	Pretax Income	115	279	139	431	870	1344	377	667	356	-1966	152
	Income Taxes	44	92	47	130	253	397	74	133	97	-547	54
	Minority Interest	0	1	-1	-3	-2	-4	-3	-6	-2	-5	0
	Equity In Earnings	14	18	26	46	-	47	-	66	33	74	18
	Income Before Extra. Items & Disc	-	0	-	0	-	0	-	0	-	0	0
	Discontinued Operations	0	0	0	0	0	0	0	0	0	0	0
	Net Income Before Extra Items/PrefDiv	85	204	119	350	619	998	306	606	294	-1340	116
	Extra Items & Gain(Loss) Sale of Assets	0	0	0	0	0	0	0	0	0	0	0
	Net Income Before Preferred Dividends	85	204	119	350	619	998	306	606	294	-1340	116
	Preferred Dividend Require	0	0	0	0	0	0	0	0	0	0	0
	Net Income to Common Share.h	**85**	**204**	**119**	**350**	**619**	**998**	**306**	**606**	**294**	**-1340**	**116**

The second case study is tabulated in Table 5.15. The table shows the current assets and liabilities for Vodafone Group PLC. In contrast with the first case study (Rolls-Royce Group PLC), the data for Vodafone Group PLC from the company's source is almost the same as the data in Worldscope. Downloaded current assets from Worldscope show that part of receivables and taxation recoverable are shifted to the other current assets account. However, the main body of current assets from the source dataset has the same pattern reported in the balance sheet in Worldscope.

In the current liabilities section, some current liabilities such as third parties, related parties and provision for other liabilities are reported separately in the source data but these items are shifted into other current assets in Worldscope. Interestingly, there are some differences reported in income tax payable for Vodafone Group PLC that are similar to the case of Rolls-Royce Group PLC. According to the company source, current taxation liabilities are reported for all interim periods. For example, the amount of current tax liabilities on 31-Mar-2005, 30-Sep-2005, 31-Mar-2006 and 31- Mar-2007 are as follows; 4353, 4639, 4448 and 5088. However, these numbers are not reported in Worldscope; they are shifted to other current liabilities. This happens for dividends payable as well. Similarly, as in the first case study, the short-term debt account is completely reported in Worldscope. Therefore, if the analyst uses details of current liabilities to calculate current accruals for both interim accounts and final year accounts, accurate amount of current accruals will not be calculated because most of these items are hidden in other current assets. For this reason we use total *current liabilities and short term debt to compute non-financial current liabilities*.

Table 5.15

Comparing components of current assets and liabilities: Vodafone Group PLC (Pounds in million)

		31-Mar-05	**30-Sep-05**	31-Mar-06	**30-Sep-06**	31-Mar-07	**30-Sep-07**	31-Mar-08	**30-Sep-08**	31-Mar-09
Company source	**Current assets**									
	Inventory	440	536	297	356	288	405	417	471	412
	Taxation recoverable	38	68	8	2	21	27	57	37	77
	Trade and other receivables	5449	6068	4438	4963	5023	5739	6551	6687	7662
	Cash and cash equivalent	3769	1400	2789	789	7481	2901	1699	1134	4878
	Current Assets - Total	**9696**	**8072**	**7532**	**6110**	**12813**	**9072**	**8724**	**8329**	**13029**
Worldscope	**Current Assets**									
	Cash and st investments	3666	1400	2789	789	7481	2901	1699	1134	4878
	Total receivables	3472	6136	2960	4965	3185	5766	4182	6724	4871
	Total inventories	430	536	297	356	288	405	417	471	412
	Prepaid expense income taxes	-	-	-	-	-	-	-	-	-
	Other current assets	2130	-	1486	-	1859	-	2426	-	2868
	Current Assets - Total	**9698**	**8072**	**7532**	**6110**	**12813**	**9072**	**8724**	**8329**	**13029**
Company source	**Current liabilities**									
	Short-term borrowing	-	-	-	-	-	-	4532	5783	9624
	Third parties	2003	2026	3070	3539	3975	4652	-	-	-
	Related parties	-	-	378	575	842	1021	-	-	-
	Current taxation liabilities	4353	4639	4448	4911	5088	4997	5123	5363	4552
	Provisions for other liabilities	8002	8212	7477	7768	8774	9867	11962	12096	13398
	Trade and other payables	228	183	139	167	267	253	356	313	373
		14586	**15060**	**15512**	**16960**	**18946**	**20790**	**21973**	**23555**	**27947**
Worldscope	**Current liabilities**	-	-	-	-	-	-	-	-	-
	Accounts payable	-	-	-	7768	-	9867	2963	-	3160
	St debt & Current portltdebt	392	2026	3448	4114	4817	5673	4532	5783	9624
	Income taxes payable	-	-	-	4911	-	4997	5123	5363	4552
	Accrued payroll	-	-	-	-	-	-	-	-	-
	Dividends payable	-	-	-	-	-	-	-	-	-
	Other current liabilities	14445	13034	12064	167	14129	253	9355	12409	10611
	Current Liabilities - Total	**14837**	**15060**	**15512**	**16960**	**18946**	**20790**	**21973**	**23555**	**27947**

Table 5.16 Comparing the income statement items: Vodafone Group PLC (Pounds in millions)

	Income statement (£m)	*31-Mar-05*	*30-Sep-05*	*31-Mar-06*	*30-Sep-06*	*31-Mar-07*	*30-Sep-07*	*30-Sep-08*	*30-Sep-09*
Company source	Revenue	34073	14548	29350	15594	31104	16994	19902	21761
	Cost of sales	-21464	-8399	-17070	-9022	-18725	-10212	-12414	-14115
	Gross profit	12609	6149	12280	6572	12379	6782	7488	7646
	Selling and distribution expenses	-2046	-940	-1876	-1038	-2136	-1152	-1349	-1479
	Administrative expenses	-3526	-1595	-3416	-1800	-3437	-1850	-2160	-2578
	Share of result in associated undertakings	1980	1187	2428	1413	2728	1443	1792	2322
	Impairment losses	-	-	-23515	-8100	-11600	-	-1700	-
	Other income and expenses	-475	-515	15	1	502	-15	-	157
	Operating profit	8542	4286	-14084	-2952	-1564	5208	4071	6068
	Non-operating income and expenses	6	-	-2	10	4	250	-14	-7
	Investment income	581	165	353	425	789	382	501	634
	Financing costs	-1178	-540	-1120	-813	-1612	-1280	-1244	-948
	Profit before taxation	7951	3911	-14853	-3330	-2383	4560	3314	5747
	Tax profit	-1433	-1282	-2380	-1218	-2423	-1233	-1145	-952
	Profit for the period	**6518**	**2818**	**-21821**	**-4548**	**-4806**	**3327**	**2169**	**4795**
Worldscope	**Income Statement (£m)**								
	Net Sales or Revenues	33463	18641	30090	15563	30276	16796	21464	21874
	Cost of Goods Sold	15503	11652	12678	6521	13251	7370	9895	10342
	Selling, General & Admin Expenses	5333	-	5425	2832	5425	2967	3784	4078
	Depreciation, Depletion & Amortization	17518	2932	4823	2483	4975	2723	3493	3846
	Other Operating Expenses	0	171	0	0	0	0	0	0
	Operating Income	-4891	3886	7164	3727	6625	3736	4291	3608
	Extraordinary Credit - Pretax	-	-	403	0	235	0	0	0
	Extraordinary Charge - Pretax	311	-	24491	8084	11547	0	1833	0
	Interest Expense On Debt	975	643	618	811	920	1265	1342	953
	Pretax Equity In Earnings	968	1212	-	1410	-	-	-	-
	Other Income/Expense - Net	10	-260	-282	-975	153	610	525	788
	Pretax Income	-4610	4195	-17667	-4734	-4931	3081	1641	3443
	Income Taxes	2192	1317	2440	1216	2358	1219	1235	957
	Minority Interest	590	44	147	63	166	37	31	-25
	Equity In Earnings	-	-	2489	1410	2655	1426	1933	2334
	Income Before Extraordinary Items & Discont'd Ops	0	-	0	-	0	-	-	-
	Discontinued Operations	0	0	-4704	-	-	0	0	0
	Net Income Before Extra Items/Preferred Div	-7392	2834	-22468	-4602	-4801	3252	2308	4845
	Extr Items & Gain(Loss) Sale of Assets	0	0	0	-493	-481	0	0	0
	Net Income Before Preferred Dividends	-7392	2834	-22468	-5095	-5282	3252	2308	4845
	Preferred Dividend Require	0	0	0	0	0	0	0	0
	Net Income to Common Shareholders	**-7392**	**2834**	**-22468**	**-4602**	**-4801**	**3252**	**2308**	**4845**

Table 5.16 shows reported items in the income statement from the company source and the downloaded income statement from Worldscope. There are differences between classifying items in the two sources. The item of interest in this study is the effect on current liabilities of the income tax of the company. Hence, 31-Mar every year is the fiscal year end date of this company; there are differences between the profit tax from the company's source (1,433 on 31-Mar-2005) and the income tax (2,192) from downloaded data are the same period. However, for year 2006 and 2007 the amount of income tax for the interim period and the final year is similar from both sources.

5.4.4 Stock returns

Most of the researches in the United States use return data from the CRSP[46] database. Datastream is the main data source for studies carried out by UK academics, and some researchers use the return index as return data. There is some research in the UK that uses the Return index (DS#RI) item from Datastream to calculate stock returns. Acker and Duck (2007) calculate the log of monthly returns, as $Ln[RI_{J,t+1}/RI_{J,t}]$, where $RI_{J,t}$ is the return index from Datastream at the close of reference day J (J = 1, 2, …, 28) in month *t*, and $RI_{J,t+1}$ is considered as the return index on the same reference day to close the following six months. Few researchers in the UK use return data from the London Share Price

[46] The Centre for Research in Security Prices (CRSP), located in the centre of the Chicago financial district, is an integral part of the University of Chicago's Booth School of Business. Chicago Booth is famous for cutting-edge financial and economic research**.** CRSP files provide a strong foundation for economic forecasting, stock market research and financial analyses to academic institutions, investment banks, brokerage firms, corporations, banks and government agencies. 80 per cent of academic research in stock market and investment analysis uses CRSP data as a source due to the completeness and accuracy of the information.

Database (LSPD)[47]. For example, the working paper by Gregory et al. (2009) provides an analysis of momentum portfolios for the UK market. They use the return data from LSPD. With regard to this database, monthly return is computed as follows:

$$R_t = Ln\left[\frac{(P_t + D_t) - P_{t-1}}{P_{t-1}}\right] \quad (5.17)$$

Where:

R_t : log- return in the month;

P_t : last traded price in month;

D_t : dividend going ex-dividend during month t (included only when x days falls in the date range of traded prices) the dividend is adjusted to a month-end basis;

P_{t-1} : last traded price in month t-1 adjusted to the same basis.

Some researchers use monthly returns to examine earnings or price momentum (Chordia and Shivakumar, 2006). They argue that; "*The predictive power of past returns is subsumed by a zero investment portfolio that is long on stocks with high earnings surprises and short on stocks with low earnings surprises"*. Their portfolio is classified based on past six-month returns.

Jegadeesh and Titman (1993) show that momentum payoffs are significantly positive as long as one year after the formation date. Six months are for buy and hold and six months for reflection on the returns. Stocks are classified according to the past six months' compound return. In addition, the sample is classified into "high" and "low" because the firms are illustrated for discretionary accruals and return information. The six-

[47] The London Share Price Database(LSPD) provides several important services for use by investment professionals, corporate executives and academics.

monthly return is calculated from the six one month returns where the monthly returns are calculated as follows:

$$R_t = \frac{P_t + D_t}{P_{t-1}} - 1 \qquad (5.18)$$

Where: R_t : the arithmetic return;

P_t : closing price the end of the month (Datastream #DI);

D_t : dividend payment during month (Datastream #UP#S);

P_{t-1} : the closing price at the end of the previous months.

The reason for using Datastream for collecting the data is that the dividend as monthly data is available in this database.

Al-Horani et al. (2003) investigate whether a measure of research and development (RD) can help to explain cross-sectional variation in the United Kingdom stock returns. They show that RD activity is informative in explaining the unconditional and conditional cross-section of returns for a large sample of UK stocks over a ten-year period. They use the monthly return index from Datastream.

Also, Soares and Stark (2009) provide evidence related to the existence of the accruals anomaly in the UK stock market. They use accounting data from the Worldscope database and market data. They include in their sample only firms that have relevant data available on both databases for the financial years ending in the calendar years from 1989 to 2004. They calculate returns from Datastream's return index data type using the following relation: $r_{i,t} = (I_{i,t} / I_{i,t-1})-1$, where $r_{i,t}$ is the return of stock *i* at month *t*, and I_{it} is the return index for stock *i* at month t. The *I* Datasream data type assumes dividend reinvestment.

As explained earlier, most researches in the UK use returns from the return index. To calculate the returns from the return index (*I*), two items of information from the Return index are needed: the current and previous period's *I*. In this thesis stock returns are calculated as follows:

$$R_t = \left(\frac{I_t}{I_{t-1}}\right) - 1 \qquad (5.19)$$

Where: I_t is the return index for the current period;

I_{t-1} is the return index for the previous period;

R_t is nominated as the returns for the specified period.

In Table 5.17, monthly data for just four months of 2009 are provided. This data displays no dividend payments although most companies pay two as three dividends per year, sometimes up to a maximum of five. Table 5.17 compares the return calculated from the return index with the return calculated from prices and dividends. As an example, the return from closing price data for the interim period 12/31/09 for Burberry Group PLC Company is -0.041949 and it is approximately equal to the return calculated from the return index for the same period. The data are similar for other periods. Therefore, in this study the return index for the interim period is used because it is easier to calculate. Table 5.18 demonstrates that market data for the end of a specific day (for example 31 December 2009) is equal to the number for the month of December and is also matched by quarter four of that year. For example, according to Table 5.18, the return index for date 31/12/2009 for the daily, monthly and half-yearly periods is equal to 298.420

Table 5.17

Comparing the return index with the return from prices and dividends

Date	***12/31/09***	***11/30/09***	***10/31/09***	***9/30/09***
Closing price	3.540000	3.695000	3.908000	3.750000
Return index	391.700000	408.850000	432.420000	414.930000
Dividend payment date	#N/A	#N/A	#N/A	#N/A
Dividend amount	0.000000	0.000000	0.000000	0.000000
Price return	**-0.041949**	**-0.054504**	**0.042133**	**-0.025468**
Index return	**-0.041947**	**-0.054507**	**0.042152**	**-0.025483**
Difference	-0.000002	0.000004	-0.000018	0.000015

Above data is collected from Burberry Group Plc Company. Closing price, dividend payment date and dividend amount are downloaded from Datastream data base.

#N/A shows there is no applicable data in data base. Price return is calculated by following formula;

$$R_t = ((P_t + D_t) / P_{t-1})$$

Where: P_t is the closing price for the current period, D_t is the dividend amount that is allocated to the share since the previous period until the Closing price date during the period and R_t is defined as the return for this period.

Return index is *calculated by* $R_t=(RI_t/ RI_{t-1})-1$

Where:

RI_t is the return index for the current period, RI_{t-1} is the return index for the previous period and R_t is nominated as the return for the specified period from the return index. The following case is presented as an example to confirm the above reason for using the returns from closing prices.

Table 5.18

Overlapping of market data for computing return as daily, monthly and interim period.

Burberry Group Plc.

Daily Data

Date	*31-Dec-2009*	*30-Dec-2009*	*29-Dec-2009*	*28-Dec-2009*
Closing price	5.990	5.910	5.900	5.860
Dividend amount	0.000	0.000	0.000	0.000
Dividend payment Date	#N/A	#N/A	#N/A	#N/A
Return index	298.420	294.440	293.940	291.950

Monthly Data

Date	Dec-09	Nov-09	Oct-09	Sep-09
Closing price	5.990	5.700	5.390	5.035
Dividend amount	0.000	0.000	0.000	0.000
Dividend payment Date	#N/A	#N/A	#N/A	#N/A
Return index	298.420	283.980	268.530	250.850

Six-monthly Data

Date	Q4Y2009	Q3Y2009	Q2Y2009	Q1Y2009
Closing price	5.990	5.035	4.230	2.818
Dividend amount	0.000	0.000	0.000	0.000
Dividend payment Date	#N/A	#N/A	#N/A	#N/A
Return index	298.420	250.850	206.500	137.550

Note: Monthly data from Datastream shows the date 1/12/2009, but when considering daily, monthly and interim data, it is demonstrated by date 31/12/2009.

The second quarter shows data for first six month, for example Q2Y2009 demonstrates the interim reporting data (the first six month data of year 2009) and Q4Y2009 implicates the reporting year-end date (the second six month of the year 2009) that is overlapped with the year-end data.

5.4.5 Unexpected earnings

Ball and Brown (1968) show that accounting earnings convey information about the underlying value of stocks. Their study is a foundation for most academic research in earnings management in accounting and finance. They argue that positive unexpected earnings are associated with positive changes in stock returns, and negative unexpected earnings are associated with negative changes in stock returns[48]. Their research isolates the impact of earnings on prices by considering cross-sectional changes in earnings and the corresponding changes in prices. Beaver et al. (1979) extend Ball and Brown's research by examining the magnitude of earnings changes. They evaluate the magnitude of earnings surprises and reveal a more pronounced return pattern than those observed by Ball and Brown.

Conroy et al. (2000) provide evidence that stock prices are significantly related to earnings surprises in Japan. Levis and Liodakis (2001) find that both positive and negative earnings surprises have an asymmetrical effect on the returns of high and low rated stocks in the UK. According to the methodology of Jegadeesh and Livant (2006), standard unexpected earnings are defined as follows:

$$SUE_t = \frac{EPS_t - EPS_{t-1}}{\sigma} \tag{5.20}$$

Where:

[48] Unexpected earnings are defined as the differences between expected earnings and actual earnings. Ball and Brown (1968) demonstrate that many income variables have been applied in searching for the results such as earnings per share and net income. Overall, there is evidence that shows developed countries indicating the appropriateness of using Earnings per share (EPS) as an earnings variable (Ball and Watts, 1972 and Kothari and Zimmerman, 1995). Ball and Brown (1968) show that earnings per share seem to provide more correct results. Ball and Watts (1972) find that earnings per share follow a random walk. Therefore, the interim reported earnings per share are used as the earnings variable in this study.

SUE_t : standard unexpected earnings. The difference between second half and first half earnings divided by standard deviation of each firm;

EPS_t : second half of earnings (Worldscope#05251);

EPS_{t-1} : first half of earnings;

$\sigma_{,t}$: standard deviation of the unexpected earnings per share (EPS).

Moorthy (2006) uses market capitalisation (Worldscope#08001) instead of standard deviation $\sigma_{,t}$ in the above formula. However, Chan et al. (1996) and Chordia and Shivakumar (2002) use standard deviation. A drift term can be included in the above equation to comply with Bernard and Thomas (1990) and Ball and Bartov (1996). They use a seasonal random walk with a trend, and this is repeated in Sadka's 2006 paper which includes the average as a drift term in the equation.

5.4.6 Sales growth and excessive economic earnings

The earnings management hidden in accruals and economic earnings reflects changes in business conditions. There is some evidence indicating sales growth can be used to measure discretionary accruals. Jones (1991) points out that the working capital accruals and depreciation, as a function of sales growth and investment in property plant and equipment (PPE), are reasonable drivers of firm value. In addition, the estimation of the Jones model provides a correlation between these fundamental firm attributes and accruals. There is research that estimates the normal relationship between credit sales and total sales to control for non-discretionary credit sales, documented by Dechow et al. (2003). They also add future sales growth and other variables to capture accruals made in anticipation of future growth. Their adjustments increase the R-squared from around 9% to 20%.

Liu et al. (2004) use future sales growth as a measure for economic earnings. It measures economic growth which is driven by rising demand. Following these researchers, this study expects that positive SUE is driven more than expected by realised sales. Sales (Worldscope#01001) growth is measured as current sales minus past period sales, and is deflated by the current value of total assets. Gu and Huang (2010) find winner stocks have bigger changes in sales. They define the sales growth as a change in sales (net), scaled by total assets.

5.4.7 Size and book-to-market as control variables

Stocks with high book-to-market ratios present higher average returns when compared with stocks with low book-to-market ratios. Daniel and Titman (2006) show that future returns are forecast significantly and negatively by intangible returns, and reversal of intangible returns creates the higher returns on high book-to-market stocks. Jiang (2010) finds a robust link between the trading behaviour of institutions and the book-to-market effect, and also finds the book-to-market effect focuses on stocks with a large proportion of active performance. Therefore, in this study, following the Fama and French (1993) methodology, firm size and firms' book-to-market value (BM) are used as control variables. Firm size is computed as the natural logarithm of year-end market capitalisation (Worldscope#08001), and book-to-market value is calculated as common equity (Worldscope#03501) -to- year-end market capitalisation.

5.5 Descriptive statistics

This chapter provides the statistical characteristics of the sample used in this study and introduces the key variables used to test the hypotheses. It is useful before introducing the regression tests and presenting the results in the following chapter, to ensure that the distributions of the variables explained above are consistent with the existing literature. Table 5.19 shows the descriptive statistics of these variables.

5.5.1 Full sample

This study begins by analysing the complete sample provided in Table 5.19. This sample covers all industries except financial firms. Stock returns (*SR*) are computed over all months from 1/2004 to 12/2009 using the return index for each half-year interim reporting period[49]. Furthermore, *SIZE* is the natural logarithm of the year-end market capitalisation (Worldscope#08001), is determined by multiplying closing price by number of shares. Book-to-market (*BM*) is the ratio of common equity to market capitalisation (Worldscope#09704). Sales growth (*SG*) is measured as reported interim period change in sales deflated by total assets at the end of the current period (Worldscope#01001). The current accrual (*CA*) is the six-monthly change in net current operating assets, i.e. current assets (Worldscope#02201), excluding cash (Worldscope#02003), minus current liabilities (Worldscope#03101), excluding the current portion of long-term debt (Worldscope#03051) deflated by Total assets at the end of the current period (Worldscope#02999)[50]. The discretionary current accrual (*DACC*) is the residual from the cross-sectional regression of

[49] SR may also be computed directly from the Return index of Datastream, but with less accuracy

[50] Even though CA is referred to Current Accrual, it is in fact effectively a net amount comprising revenue accruals, expense accruals, revenue deferrals and expense deferrals.

ACC on a constant scaled by the Total assets six months earlier[51]. The earnings surprise variable is the standard unexpected earnings (*SUE*) calculated as the six-monthly change in earnings scaled by the standard deviation of the firm's six-monthly earnings series, where earnings are before extraordinary items (Worldscope#05202).

Table 5.19 presents the descriptive statistics for the variables used in the models for the UK firms. The average (median) value of accruals is -0.002 with a standard deviation of 0.085, which is similar to the findings in Xie (2001). Inter quartiles for accrual varies from -0.034 to 0.033. The average (mean) and standard deviation for stock returns are -0.003 and 0.386, similar to figures quoted in Dechow (1994). She presents mean and standard deviation of stock returns of -0.007 and 0.160. As can be seen in Table 5.19, *SIZE* has an average of 17.908 and a standard deviation of 2.167. The average for *SUE* is 0.039 (SD 0.915; IQR: -0.545 to 0.654) and *BM* has an average of 0.708 (SD 0.796; IQR: 0.279 to 0.925). Sales growth (*SG*) has an average of 0.026 (SD 0.128; IQR: -0.019 to 0.071) is demonstrated in table 5.19

[51] Note that a positive accrual is income-increasing and a negative accrual is income-decreasing

Table 5.19
Descriptive statistics

		Mean	*Std. Dev.*	*25th Percentiles*	*Median*	*75th Percentiles*	*Skewness*	*Kurtosis*
Stock return	*SR*	-0.003	0.386	-0.253	-0.019	0.192	0.851	5.081
Stock return(Lag)	SR_{t-1}	-0.004	0.373	-0.238	-0.019	0.179	1.028	6.019
Firm size	*SIZE*	17.908	2.167	16.300	17.721	19.450	0.242	2.407
Book to market value	*BM*	0.708	0.796	0.279	0.516	0.925	1.688	9.549
Sales growth	*SG*	0.026	0.128	-0.019	0.012	0.071	0.424	7.098
Current accruals	*ACC*	-0.002	0.085	-0.034	-0.001	0.033	-0.309	8.299
Discretionary current accruals	*DACC*	-0.013	0.117	-0.061	-0.016	0.036	0.094	6.494
Discretionary current accruals with ROA	*DACC_ROA*	0.001	0.081	-0.032	0.001	0.034	-0.070	7.521
Standard unexpected earnings	*SUE*	0.039	0.915	-0.545	0.041	0.654	-0.091	2.753

Note: The sample consists of 5,616 firm-period observations

5.5.2 Correlation matrix

Summary statistics and correlation coefficients are computed for all variables. The variables are reported as follows. The stock return from months one to six is calculated from the return index. The natural logarithm of the market value of equity (year-end market capital # WS # 8001) at the end of the interim period, and the ratio of the book-to-market (BM) from the end of interim period are calculated by dividing common equity (WS#3501) by year-end market capitalisation. This study follows Fama and French (1993) when computing the size and book-to-market values.

The past six months' return and the interim sales are calculated by taking the differences between past sales and current sales and then dividing them by the lag of total assets, therefore growth in sales is covered from months one to six. In addition, unexpected earnings are considered for six months; as mentioned in this chapter, unexpected earnings are calculated by taking differences of income before extraordinary items and dividing by year-end market capital.

Table 5.20 reports the Pearson and Spearman correlations and their significance levels (in italics) between the selected variables for the set of UK companies. A preliminary indication of the association between discretionary accruals and the earnings and stock returns for firms can be obtained by looking at the simple (Pearson) correlations between variables presented Table 5.20. As mentioned earlier, managers use discretionary accruals to drive stock returns via accounting earnings. The stock return is correlated with standard unexpected earnings as the variable used to measure earnings surprises; a positive correlation between SUE and stock returns is expected. Table 5.20 reveals that the *SUE* positively and significantly associated with *SR* (the proxy for the managed component) at

the 0.01 level (0.092, p-value <0.001). This is consistent with the finding of Jegadeesh and Livant (2006). There is a positive correlation between sales growth and stock returns which is expected according to the literature reviews. Similarly, the lag of Stock returns has a negative correlation with discretionary accruals (0.061, p-value <0.001) and there is positive correlation between *DACC* and *SUE* (0.248, p-value <0.001). Also the correlation between *DACC_ROA* and *SUE* is significant (0.082, p-value <0.001). In this study, discretionary accruals are divided into dummy variables[52]. According to this table, the correlation coefficient demonstrates that discretionary accruals have a negative relationship with the lag of stock returns; the coefficient is -0.061 and it is significant. However, at the same time the discretionary accruals have a negative relationship with stock return. In the present study, the standard unexpected earrings are divided into two dummy variables which are standard unexpected earnings high and low. The former is expected to have positive earnings surprises and be significantly correlated with stock returns. Regardless, the positive correlation between stock returns and standard unexpected earnings demonstrates that future stock return can be explained by positive earnings surprises. *SIZE* has a positive correlation with *SR* (0.147, p-value <0.001) while it has a positive correlation with *SUE* (0.033, p-value 0.013). Correlations between *SIZE* and *SR* are also relatively high. This high correlation between accounting-based control variables is consistent with prior studies on earnings management (see Li, 2011).

As a result, it is unlikely that multicollinearity will be a problem for our estimated regressions. In addition, the magnitude of the Spearmen correlation coefficients is

[52] *DCA_H* is defined as high discretionary accruals and shows the positive accruals. *DAC_L* presents low discretionary accruals and it is negative.

sometimes different when compared with the results reported for the Pearson correlation coefficients. This hints at the possibility of extreme observations influencing the correlations and, also, any subsequent analyses using untreated data.

Table 5. 20
Pearson and Spearman correlation coefficients between variables.

	SR	*LSR*	*Size*	*BM*	*SG*	*LSG*	*ACC*	*DACC*	*DACC_ROA*	*SUE*
SR		0.117	0.185	-0.129	0.015	0.034	-0.006	-0.023	-0.040	0.093
		0.000	*0.000*	*0.000*	*0.285*	*0.017*	*0.669*	*0.104*	*0.005*	*0.000*
LSR	0.063		0.251	-0.232	0.142	0.023	-0.007	0.085	-0.014	0.091
	0.000		*0.000*	*0.000*	*0.000*	*0.113*	*0.601*	*0.000*	*0.323*	*0.000*
SIZE	0.147	0.180		-0.333	0.128	0.110	0.034	0.050	0.007	0.028
	0.000	*0.000*		*0.000*	*0.000*	*0.000*	*0.019*	*0.000*	*0.626*	*0.053*
BM	-0.107	-0.176	-0.270		-0.136	-0.133	-0.014	-0.054	-0.012	-0.077
	0.000	*0.000*	*0.000*		*0.000*	*0.000*	*0.339*	*0.000*	*0.386*	*0.000*
SG	0.009	0.091	0.073	-0.093		-0.178	0.023	0.611	0.165	0.329
	0.507	*0.000*	*0.000*	*0.000*		*0.000*	*0.100*	*0.000*	*0.000*	*0.000*
LSG	0.025	0.004	0.043	-0.057	-0.167		0.063	-0.154	-0.002	-0.168
	0.078	*0.775*	*0.003*	*0.000*	*0.000*		*0.000*	*0.000*	*0.864*	*0.000*
ACC	0.007	-0.001	0.028	0.011	0.001	0.024		0.460	0.945	0.040
	0.592	*0.948*	*0.035*	*0.400*	*0.929*	*0.093*		*0.000*	*0.000*	*0.005*
DACC	-0.023	0.061	0.025	-0.043	0.668	-0.138	0.508		0.630	0.248
	0.091	*0.000*	*0.065*	*0.001*	*0.000*	*0.000*	*0.000*		*0.000*	*0.000*
DACC_ROA	-0.018	-0.004	-0.002	-0.004	0.152	-0.023	0.960	0.669		0.082
	0.176	*0.793*	*0.909*	*0.750*	*0.000*	*0.107*	*0.000*	*0.000*		*0.000*
SUE	0.092	0.075	0.033	-0.077	0.283	-0.079	0.049	0.216	0.080	
	0.000	*0.000*	*0.013*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	

Pearson correlation (below diagonal) and Spearman correlation (above diagonal) are reported. The sample consists of 5,616 firm-period observations. In addition, P-value of each variable is reported regarding the coefficient to show the level of significance. Stock Return (SR) is computed over all months from 1/2004 to 12/2009 using Datastream closing prices (Datastream#UP#S) and dividend (Datastream #DI), In addition, it is defined as the difference between the closing price (plus dividends) at the end of each half year interim reporting period and the natural logarithm of the price at the beginning of the interim reporting period (SR may also be computed directly from the DataStream Total Return Index, but with less accuracy). Note; their significance levels is shown in *italics*. The upper right triangle data contains *Spearman* coefficients and the lower of triangle contains *Pearson* coefficient. Two reported correlation coefficients, linear (eg, Pearson) and rank (eg, Spearman), that are commonly used to measure linear and general relationships between two variables. This thesis focuses on Pearson (linear correlation).

5.5.3 Winners and losers

In the literature review, it was noted that managers are extremely interested in maintaining growth in earnings because their compensation is often tied to firm profits. The fact that a firm has falling earnings expectations can immediately affect its stock price. On the other hand, firms that beat expectations are rewarded by investors (Chan et al., 2006). Research suggests that the market fixates on firms' bottom line income to the exclusion of other indicators of operating performance. With regard to these hypotheses it will be important to follow up winner and loser firms.

Winner firms are defined as firms for which the short term stock return is high, and they are in the top quintiles. Loser firms are defined as firms stabilised in the bottom quintiles of returns. As mentioned in the data definition, return is based on share price and dividend amount during the specified period. Much research focuses on stocks and the impact of accounting performance by examining winner and loser firms, as documented in the literature review. Sloan (1996) finds a return anomaly associated with discretionary accruals. He shows that stocks with large positive accruals in a given year tend to have low returns in the next year, and then these stocks have an average size-adjusted return in the following year. This finding is confirmed by Collins and Hribar (2000) with quarterly accruals. These results demonstrate that large positive accruals are a sign of managed earnings. It is not expected that investors realize this; therefore they believe that firms will retain their profitability in the future.

5.7 Summary

This chapter explains the data collection process and discusses the research methodology of the study. This chapter also describes the criteria used to select the full sample and the characteristics of the sample. Interim data problems in the Thomson One Banker data base and particularly Worldscope and Datastream are described. In addition, this chapter discusses reported accounting data for interim periods and for fiscal year-end in Worldscope. Finally, this chapter gives a brief explanation of the variables employed in the study.

Chapter 6

Regression methodology and model limitations

6.1 Introduction

This study demonstrates that past returns are positively correlated with future earnings management. Winner and loser firms try to continue a return pattern from the current period to the next period using discretionary accruals. The regression model includes control variables, such as size of firm and book-to-market values. The companies having the highest returns during the period are defined as winners and those with lowest returns as losers. The profit from the returns anomaly results from a portfolio holding the best past performing stocks (winner stocks) and shorting the weak past performing stocks (loser stocks). Winners and losers are obtained by ranking returns from the top to bottom quintiles. The combination of winners and losers in the top and bottom quintiles yield significantly positive returns. Thus, past and future returns have a linear relationship.

The other definition of winners and losers in this study concerns stocks ranked at the top and bottom of returns performance over an interim period. This ranking is known as the 'formation period' of the portfolio. The first part of this thesis is as follows:

- Whether past returns that are positively correlated to the future management performance in the winner and loser firms are continued in the returns pattern from the first to the second semester.

- Whether returns over the last six months are positively correlated to discretionary accruals.

Based on the hypothesis of this study, *firms use discretionary accruals in the first semester to create positive earnings surprises in order to remain as winners*. Also, *loser firms attempt to change their earnings in the first semester in order to be considered as winners over the longer term*. Winner and loser firms have motivations to continue their returns from semester to semester. It seems that profit is created from short-term returns anomalies that are formed as a result of holding a portfolio in the best condition.

The profit resulting from the fluctuation of short-term anomalies is the outcome of holding the best portfolio of winners and avoiding holding the portfolio of lowest performing firms. In addition, in the top and bottom quintiles, the relation between winners and losers is positive. This means that there is a linear relationship between returns in the past and in the future.

6.2 Panel data regression

Much research uses the panel data model in empirical economics because it allows them to control the unobserved individual time-invariant characteristics. Panel data presents data that is grouped or that has a hierarchical structure. This analysis has an important role in modern econometric methodology. Using this method, it is possible to take advantage of the grouping structure to address substantive questions more accurately than with simple forms of data. Data with a grouping structure may be used to estimate models with complex

forms of heterogeneity. For example, in an earnings model in which individuals have different permanent levels of income, this may arise from differences in ability.

Observations on many individual economic units such as firms, households or geographical areas over a period of time are defined as 'panel data sets'. One of the earliest studies to use panel data is Balestra and Nerlove (1966) which employed data on 36 US states over a 13-year period in a regression analysis. Panel data may be used with pure cross-sectional data observations on individual units at a specific time, and with pure observational time-series data. Panel data may be useful to view a cross-section with a time dimension. Sometimes the panel data methods are used as 'cross-sections over time' or 'pooled' cross-sectional time-series data. Panel data provides some advantages over data sets with only a temporal dimension. This point is made presented by Nerlove (2000) as follows:

> *"(a) First, more observations are generally available than with conventional time-series data, although cross-section data sets are often very large.*
>
> *(b) panel data are not so highly aggregated as typical time-series and because, in the best of circumstances, we observe the same individual units through time, more complicated dynamic and behavioural hypotheses can be tested than those that can be tested using unidimensional data*
>
> *(c) the use of panel data may also provide a means for analysing more fully the nature of the latent, or unobserved, disturbance terms in the econometric relationships.".* (Nerlove, 2000, pp.3-4)

Other researchers such as Hsio (2003) and Baltagi (2005) have outlined advantages and disadvantages of panel data regression. Some of the disadvantages of using panel data regression are as follows: First, there is the problem of designing and collecting the panel data; second, there is the possibility of measurement errors; third, there is the problem of data selection; and fourth, there is the problem of determining the short data and cross-sectional dependence. However, despite these disadvantages, panel data provides the opportunity to employ many more explanatory variables and investigate complicated data dynamics.

6.3 The stock returns as a benchmark measure of firm performance

This study assumes that stock markets are efficient, in the sense that stock prices incorporate all commonly available information about firms without bias. Thus, share price performance is used as a benchmark to evaluate other information about firms.

According to the research design of Dechow (1994), which was extended by Loftus and Sin (1997), there is a stronger contemporaneous association between stock returns and earnings than between stock returns and cash flows from operations adjusted for current accruals. These authors calculate stock returns as the change in price plus dividends, divided by the starting price. They consider that the measurement interval for stock returns is the same as the one they use to calculate accounting variables. With regard to Loftus and Sin's research, the stock returns do not capture the effects on expected cash flows after the end of the period.

They use balance dates[53] to calculate the returns. Loftus and Sin use the following regression to test their hypothesis:

$$R_{it} = \alpha_0 + \alpha_1 \frac{E_{it}}{P_{it}} + \varepsilon_{it} \qquad (6.1)$$

where:

P_{it} : price per share of firm *i* at time *t*

R_{it} : returns per share of firm *i* for period t_{-1} to *t*

E_{it} : accounting earnings per share of firm *i* from t_{-1} to *t*

Loftus and Sin (1997) conduct their analysis on annual data because quarterly data was not available in Australia at the time of research; however Dechow (1994) conducts her analysis on quarterly intervals in the United States. Loftus and Sin test the above assumption by comparing the R-squared of the regression of the stock returns on earnings in the above model. In the above model, earnings per share are scaled by starting price. The Table B in the appendix shows the summary statistics and the results of their research.

6.4 Estimating the association between stock returns and related variables

The present study explores whether past performance can explain future earnings management. If winner or loser firms use positive or negative discretionary accruals in the next period we expect past returns to be positively correlated to future discretionary accruals. According to this hypothesis, if past winner (or loser) firms use positive (or negative) discretionary accruals in the next period, we expect to be able to split discretionary accruals. The evidence shows that poorer returns to growth stocks relative to

[53] The end of an accounting year is defined as a balance date.

value stocks are the result of expectation errors about future earnings performance. Furthermore, evidence demonstrates that growth stocks exhibit an asymmetric response to earnings surprises (Skinner and Sloan, 2002). They find that while growth stocks are at least as likely to announce negative earnings surprises as positive earnings surprises, they show an asymmetrically large negative price response to negative earnings surprises. After controlling for this asymmetric price response, they display no remaining evidence of a returns differential between growth and stocks value. They also find that poorer returns to growth stocks are attributable to overoptimistic expectation errors that are corrected through subsequent negative earnings surprises.

In addition, the present study considers sales growth as one of the control variables. This study follows the method of Liu et al. (2004) who use future sales growth as a measure for economic earnings. It measures economic growth which is driven by rising demand. Firm size and book-to-market value are also control variables. Firm size is used for investor coverage. This is because larger firms have more shareholders and therefore more analysis is needed to follow them. Following Hong et al. (2000), small firms are found to have more pronounced fluctuations than large firms. Accordingly, this study expects to find that small firms use more discretionary accruals to change the returns in the short term (see Louis, Robinson and Sbaraglia, 2005). Following the asset pricing literature, the book-to-market ratio is considered in research model regressions as a method for distress risk (Fama and French, 1992). They show that size and book-to-market equity are methods for providing sensitivity of risk factors in returns. Other researchers find high book-to-market firms that are distressed have lower rates of sales growth and low earnings.

In this study it is expected that high book-to-market value firms to have low accruals, and vice versa, the winner firms with low book-to-market values have a high volume of discretionary accruals. Moreover, if the returns of winner firms manage accruals leading towards a higher level of returns, and loser returns manage to stay as losers, it is therefore can be expected that earnings management is in the same direction as earnings surprises. For this purpose, an independent variable to define standard unexpected earnings is used.

This study attempts to find out how earnings management is positively correlated with contemporaneous return by considering the stock return performance. Given the hypothesis it should be expected that the short-term returns of winner firms are at the top, and the returns of loser firms over the same period have lower accruals. This leads to a positive relationship between returns and accruals.

In this section, the study attempts to find whether earnings management is positively correlated with return performance. According to the hypothesis presented in Chapter 3, it is expected that the short-term returns of winner firms have higher accruals, and the short-term returns of loser firms have lower accruals. This leads to a positive relationship between discretionary accruals and returns. As explained in this chapter, future returns are related to past returns, so companies that are winners or losers in the past are expected to show returns correlated with accruals in the future. Therefore, in this study a regression model is defined to show the function of accruals according to the association between returns and other independent variables such as past returns, size and book-to-market value.

Also, a regression by firm with dummy variables (in this thesis high and low standard unexpected earnings is defined as dummy variables) and discretionary accruals is

employed for month 6 and month 12 on the six-month returns, and also using various control variables. Therefore, the cumulative six-month returns are fitted to the contemporaneous discretionary accruals and other variables. The panel regression used is as follows:

$$Y_t = \beta_0 + \beta_1 R_{t-1} + \beta_2 SIZE_t + \beta_3 BM_t + \beta_4 SG_t + \beta_5 DACC_t + \beta_6 SUE_t + \varepsilon \quad (6.3)$$

R_t : the stock return over the last semester of the year;

R_{t-1} : the stock return over the first semester of the year;

$SIZE_t$: the natural logarithm of the year of the market value of equity over the first six months;

BM_t : the book value of equity over the last semester divided by the market value of equity over the second half year;

SG_t : growth in half-yearly sales, i.e. second-half sales divided by first-half sales, minus one;

$DACC_t$: discretionary current accrual in the second semester of the year;

SUE_t : standard unexpected earnings, i.e. the difference between second-half and first-half earnings divided by the standard deviation of all six-monthly earnings of the firm.

Following Jegadeesh and Titman (1993), past returns are included as a control variable for current returns. It is expected that the relationship between past returns and future returns are positive. Risk control variables are also included. The variables are firm size and book-to-market value, following Fama and French (1993). According to asset pricing theory, a positive relationship between book-to-market value and returns is expected since, as

mentioned earlier, smaller firms have more risky investments than large firms, and firms with high book-to-market values have greater distress risks[54].

According to the literature, it is expected that sales growth and unexpected earnings are positively related to returns (Jegadeesh and Titman, 2002). In addition, to examine the effect of positive earnings surprises, dummy variables are included which are high standard unexpected earnings (*SUE_H*) for positive surprises and low standard unexpected earnings (*SUE_L*) for negative surprises. Thus, the regression is modified again as follows:

$$R_t = \alpha + \beta_1 R_{t-1} + \beta_2 SIZE_t + \beta_3 BM_t + \beta_4 SG_t +$$

$$\beta_5 \boldsymbol{DACC} + \beta_6 \boldsymbol{SUE\_H_t} + \beta_7 \boldsymbol{SUE\_L_t} + \varepsilon \qquad (6.5)$$

According to the results explained in the next chapter, the coefficient of past returns decreases after adding the other variables. This indicates that sales growth and earnings management have a relationship with past returns. However, discretionary accruals and past returns change the coefficient regarding past returns and this result indicates that their explanatory power is additional to past returns. There is a negative correlation between discretionary accruals and returns which confirms the hypothesis presented in this study, and shows that earnings management drives stock returns performance by following unexpected returns.[55]

Furthermore, the results show that the previous six month returns, sales growth, discretionary accruals and standard unexpected earnings are significant variables to explain

[54] In this study the market risk factor (β) is not considered as a control variable because according to Fama and French (1993), prior research finds that beta *(β)* does not have additional explanatory power.

[55] After controlling the mean factor in accruals, it is considered that past discretionary accruals and contemporaneous accruals are negatively related to future returns (Sloan, 1996). Sloan finds a negative relationship between past accruals and future returns.

future returns, as well as the risk control variables of size and book-to-market value. The following tables demonstrate that discretionary accruals and size are positively correlated to returns and to the price of stocks as the main part of returns, while other variables are negatively correlated to returns. This indicates that returns are explained by earnings management. Variable definitions and the expected signs of regression coefficients in the main model are presented in Table 6.1.

Over the last two decades, researchers have found that past returns contain information about expected returns. Both short-term (less than 1 month) and long-term (3-5 year) past returns are inversely related to future average returns[56], while intermediate horizon past returns (3 to 12 months) are positively related to future average returns (Grinblatt et al., 2004). Previous researches show that the ratio of equity book value to market value is positively related to future stock returns. See Fama and French (1993), Daniel and Titman (2006), Zhang (2009) and Jiang (2010).

Current sales growth and standardized unexpected earnings are also included as control variables. According to the existing literature both sales growth and unexpected earnings are expected to be positively related to current returns; see for example Chan et al. (1996) and Jegadeesh (2002). The relation between discretionary accruals and future returns are included in the main model regression. The positive relationship between these items is

[56] Some classic papers that focuses on this topic include Jegadeesh (1990), DeBondt and Thaler(1985), Jegadeesh and Titman (1993), Grundy and Martin (2001), and Lee and Swaminathan (2000).

captured well in the regression model used by Teoh et al. (1998), Jones (1991) and Li (2011). Some researchers find a negative relationship between size and future returns, e.g.,

Table 6.1

Expected signs of regression coefficients and definitions of test variables

Variable	Expected sign	Definition of variable	Similarly defined in prior research
Lag of Stock return	+	P_t is the price close for the current period, D_t is the dividend amount that allocated to the share price since previous period until the price close date during this period and R_t is defined as the returns for this period	*Jegadeesh and Titman (1993), Chordia and Shivakumar (2006).*
Natural logarithm of Market capitalisation (SIZE)	+	the natural logarithm of year-end market capitalisation	*Li(2011)*
Book-to-Market	+	market capitalisation-to-common equity	*Fama and French (1993), Daniel and Titman (2006) and Jiang (2010)*
Sales growth	+	Sales growth is measured as current sales minus past period sales, and is deflated by the current value of total assets	*Dechow et al. (2003), Liu, et al.(2004) and Gu and Huang (2010*
Discretionary accruals	+	CA_t^i is total current accrual for firm *i* and six month *t*, $\Delta Sales_t^i$ is the change in total sales for the six-month period, TR_t^i is the total accounts receivable, TA_t^i is the total assets for the first six months and TA_{t-1}^i is the total assets from the previous six months	*Teoh et al.(1998),Jones (1991) and Li(2011)*
Standard unexpected earnings	+	The difference between second-half and first-half earnings divided by standard deviation of each firm, EPS_t is the second half of earnings and EPS_{t-1} is the first half of earnings and $\sigma_{,t}$ is the standard deviation of the unexpected earnings per share by firm.	*Ball and Brown (1968), Beaver et al. (1979), Jegadeesh and Livant (2006),*

Fama and French (1993) and Zhang (2009). However recently research by Li (2011) finds a positive relation between size (as market capitalisation) and future stock returns.

6.5 Incorporation of data for first and second semesters

This study follows a parallel procedure for testing the main model with a comprehensive sample of firm-years to disclose the association between stock returns and related variables such as sales growth and standard unexpected earnings. The main aim of these new examinations is to test the association between stock returns and discretionary accruals based on different period performances. As mentioned, periods are defined as first semester (S1) and second semesters (S2). Therefore, for this further analysis each semester is compared with the same semester in the last year. For example, the lag of total assets 2006-2 is the amount of total assets in 2005-2. This new analysis is applied to find out the robust tests and consistency of our findings with annual report.

As mentioned before, based on the main model regression (6.3), each variable is divided into six monthly performances (semesters). As an example, R_t is the stock return over the last six months of the year (semester, S2)., and R_{t-1} is the stock return over the first semester (S1) of the year.

In the new regression, R_t is the stock return for semesters (S1) or (S2) and R_{t-1} is the stock return for these semesters and in the previous year, and so on. The regression model (6.3A) is defined as follows:

$$R_t = \beta_0 + \boldsymbol{\beta_{01} S_1} + \beta_1 R_{t-1} + \boldsymbol{\beta_{11} S_1} R_{t-1} + \beta_2 SIZE_t + \boldsymbol{\beta_{21} S_1} SIZE_t + \beta_3 BM_t + \boldsymbol{\beta_{31} S_1} BM_t + \beta_4 SG_t + \boldsymbol{\beta_{41} S_1} SG_t + \beta_5 DACC_t + \boldsymbol{\beta_{51} S_1} DACC_t + \beta_6 SUE_t + \boldsymbol{\beta_{61} S_1} SUE_t + \varepsilon \quad (6.3A)$$

Where, $\boldsymbol{S_1}$ is a dummy variable indicating 1 for the first semester and 0 for the second semester.

The estimation for yearly effects runs regression (6.3), and *t* is interpreted as the financial year, not the half yearly period. The results show there is a negative relation between stock returns and discretionary accruals; these results confirm the previous results of the main equation in this study. In contrast, the result based on yearly data show positive discretionary accruals similar to the results of Dechow et al. (2003).

6.6 Returns portfolios for winner and loser firms

As described in the literature review, managers are extremely interested in maintaining growth in income because their compensation is often linked to their firms' profits (Chan et al., 2006). The research also shows that if a firm has fallen short of earnings expectations, this can immediately affect its stock price, while firms that beat expectations are attractively rewarded by investors. The focus on earnings is so strong that is suggested that the market focus on firms' bottom line income is to the detriment of other indicators of operating performance.

Chan et al. (2006) examine the power of accruals regarding stock returns by considering three steps. First, they test the operating performance of firms with high and low accruals. Their research follows whether the timing of changes in accruals coincides

with the timing of changes in underlying profitability, by applying methods with indicators such as sales turnover. Second, they test the individual components of accruals, such as accounts receivable and inventories. Some items offer an opportunity for managers to have more discretion (e.g. relating to the timing of revenue recognition). Therefore, focusing on such items may highlight the effects of manipulation.[57] Third, they decompose accruals into discretionary and nondiscretionary components and examine the information in each component for returns. Their findings show that accruals are negatively related to future stock returns, as documented by Sloan (1996). In addition, Chan et al. show that the nondiscretionary component of accruals, constructed by assessing past trends in sales and accruals, cannot predict future returns. Sloan (1996) finds that stocks with large positive accruals (increases in net income) in a given year tend to have low returns in subsequent years; these stocks have an average size-adjusted return of 5.5% in the following year. Collins and Hribar (2000) repeat these results with quarterly accruals. One important interpretation of these results is that large positive accruals are a sign of earnings management, but investors are not aware of this and are misled into believing that future profitability will stay at a high level. A large number of researchers examine whether mispricing can be linked to the portion of accruals that reflects opportunistic managerial behaviour, defined as discretionary accruals. Jones (1991) provides a model to identify the discretionary and nondiscretionary components of accruals. With regard to this model, Subramanyam (1996) and Xie (2001) show that discretionary accruals predict returns, but they do not find evidence that nondiscretionary accruals predict returns. Thomas and Zhang

[57] Hribar (2000), and Thomas and Zhang (2002), for instance, focus on the relation between inventory changes and future stock returns.

(2002) examine the importance of the different components of working capital changes. Teoh et al. (1998a, 1998b) demonstrate a negative relationship between discretionary current accruals and subsequent stock returns for companies issuing new stock, as well as all non-issuing companies.

Chan et al. (2006) provide a method to predict returns using earnings by considering accruals as a measure of the quality of earnings. They classify stocks at the end of each April over the sample period into one of five categories on the basis of earnings surprises, and at the same time, stocks are independently classified into quintile groups on the basis of accruals. Afterwards, they make an intersection of these two classifications, prepared across 25 categories[58]; stocks are equally weighted within each group.

6.8 Summary

This chapter describes a model to test hypotheses. The regression model provides the link between stock returns and other relevant variables. Furthermore, this chapter, discusses two

[58] They provide annual buy-and-hold returns in the first year after portfolio formation. Size and book-to-market adjusted abnormal returns are computed as follows: each April, Chan et al. (2006) calculate quintile break points for size (market value of equity) on the basis of NYSE stocks. Since the bottom quintile of firms contains a disproportionately large number of firms (mostly NASDAQ stocks), they divide this group into two subgroups (the first and second deciles of the distribution of firm size). Accordingly, there are six categories by firm size. Furthermore, Chan et al. (2006) calculate quintile break points for the ratio of book-to-market value of equity. The intersection of these two classifications gives 30 groups, and buy-and-hold returns are calculated for equally weighted portfolios of the stocks within each group. Underlying where a stock falls given the size and book-to-market break points, one of these portfolios is assigned as a control. Chan et al. then compute abnormal returns for a stock as the difference between its raw return and the return of the control portfolio.

hypotheses that result from the research questions. According to these hypotheses the relevant independent variables are sales growth, discretionary accruals, standard unexpected earnings. Also, control variables are size and book-to-market. In addition, this chapter gives an explanation of the regression models and the variables employed in the study.

The next chapter (Chapter 7) includes the results of testing the relation between returns and earnings management. In addition, the chapter discusses a comparison of the results with those from prior studies. Finally, the limitations and implications of the research are given, and the potential for further research.

Chapter 7

Analysis and results

7.1 Introduction

In this chapter, the main regression is discussed concerning the hypotheses in Chapter 4. As seen in the regression model documented in the previous chapter, the regression model explains the associations between stock returns and the independent variables discussed earlier. In this regression model, past returns, current sales growth, current discretionary accruals and standard unexpected earnings are the main independent variables, while book-to-market value and size are control variables.

7.2 Analysis of discretionary accruals

Based on the literature review of Chapter 2, and the definitions of variables set out in Chapter 5, current accruals include short-term assets and liabilities supporting daily operations; in addition, accruals are decomposed into discretionary and nondiscretionary. Current accruals are calculated as follows. First, the change in cash and short term investments (WS#02001) is subtracted from total current assets (WS#06615), and then short term debt and current portion of long term debt (WS#03051) is subtracted from total current liabilities (WS#03101). Third, the second item is subtracted from the first. Finally, the result is deflated by the one period lag of total assets (WS # 02999). All items are considered as six-month data and Table 7.1 shows the descriptive statistics of actual, discretionary and

predicted accruals for interim and final year reporting from 2004-2 to 2009-2. According to Table 7.1 the mean value for *ACC* in the first semester is positive whenever *ACC* in the second semester (S2) is negative, and this is repeated for *DACC* and *NDACC*. The mean of Non-discretionary accruals is equal to the differences between actual accruals and discretionary accruals, for example, for 2009-2 the mean of *NDACC* is -0.012 which is the difference between *ACC* and *DACC* (0.062 - 0.074= -0.012).

Table 7.1
Descriptive statistics of actual, discretionary and predicted current accruals

	ACC		***DACC***		***NDACC***	
Period	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
2005-1	0.027	0.005	0.020	0.005	0.007	0.001
2005-2	-0.029	0.005	-0.020	0.005	-0.009	0.001
2006-1	0.013	0.004	0.008	0.004	0.005	0.001
2006-2	-0.010	0.004	-0.003	0.004	-0.007	0.001
2007-1	0.013	0.003	0.009	0.003	0.005	0.001
2007-2	-0.012	0.004	-0.004	0.004	-0.008	0.001
2008-1	0.013	0.003	0.010	0.003	0.003	0.001
2008-2	-0.012	0.003	-0.004	0.003	-0.008	0.001
2009-1	0.003	0.003	-0.001	0.003	0.004	0.001
2009-2	-0.016	0.003	-0.010	0.003	-0.006	0.001

'*ACC* ' is the actual current accrual that is deflated by lag of total assets. '*DACC*' is discretionary accrual and *NDACC* is non-discretionary accrual that is predicted.

In this study, current accruals come from the following formula: $ACC_t = [\Delta (CA_t - CSI_t) - \Delta (CL - STD_t)]/TA_{t-1}$. CA_t is defined as current accruals , CA_t is the Total current assets (WS#06615), CI_t is Cash and Short term Investments (WS#02001), CL_t is Total Current liabilities (WS#03101), STD_t is Short term debt and current portion of long term debt (WS#03051), TA^{l}_{t-1} is the total assets (WS#02999) from the last period, and Δ is defined as six-monthly change in the respective variables, for firm *i* and month *t.* In addition, in the current study, to calculate discretionary accruals, the regression is as follows: $ACC_t = a_1 (1/TA_{t-1}) + a_2 (\Delta SA_t - \Delta AR_t/TA_{t-1}) + ROA + \varepsilon_t$.

Where ACC_t is total current accruals for firm i and six months t, ΔSA_t is the change in total sales (WS # 01001) for six months and AR_t is the total assets for the first six months, *ROA* is return on assets and TA_{t-1} is the total assets from the previous six months and AR^{i}_{t} is the total accounts receivable (WS#02051). Thus, discretionary current accruals are computed as follows: $DACC_t$, the differences between discretionary accruals and current accruals which is defined as result is taken from nondiscretionary accruals. *FTA* is calculated as $1/TA_{t-1}$ and *STA* is $\Delta SA_t - \Delta AR_t/TA_{t-1}$.. Note: There is 5,616 firm-period observation.

Figure 7.1 shows the relationship between deflated accruals and predicted accruals. This figure demonstrates that current accruals in interim periods and final year periods are predicted systematically. For example, the means of current accruals (*ACC*) in interim periods 2006-1 and 2007-1 are 0.013 and they are positive. Predicted accruals (*NDACC*) in the same periods 2006-2 and 2007-2 are 0.005 and they are positive as well. The means of current accruals for periods 2006-2 and 2007-2 (final year) are -0.010 and -0.012 and they are negative. The predicted accruals for same periods are -0.007 and -0.008 and they are negative. *This graph shows there are systematic reversals in accruals in interim periods in UK companies.*

Figure 7.2 composes the behaviour of current accruals and predicted accruals with discretionary accruals. This figure demonstrates the current, discretionary and predicted accruals have the same pattern. The mean of current accruals, discretionary accruals and predicted accruals for the interim period 2008-1 are 0.013, 0.010 and 0.003 respectively and they have positive signs. The means of current accruals, discretionary accruals and predicted accruals for the final year 2008-2 are -0.012, -0.004 and -0.008, and all signs are negative; this happens for the following and previous interim and final periods as well.

This figure 7.2 shows that predicted accruals, using the modified predictor based on current changes in sales after controlling for return on assets, can capture the time series pattern.

Figure 7.1 The behaviour of current and predicted accruals during interim and final reporting periods

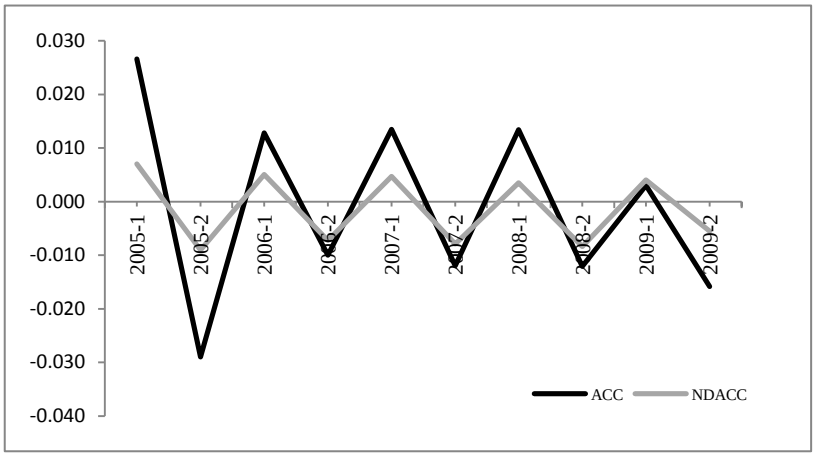


Figure 7.2 The behaviour of current accruals and predicted accruals with discretionary accruals during interim and final reporting periods

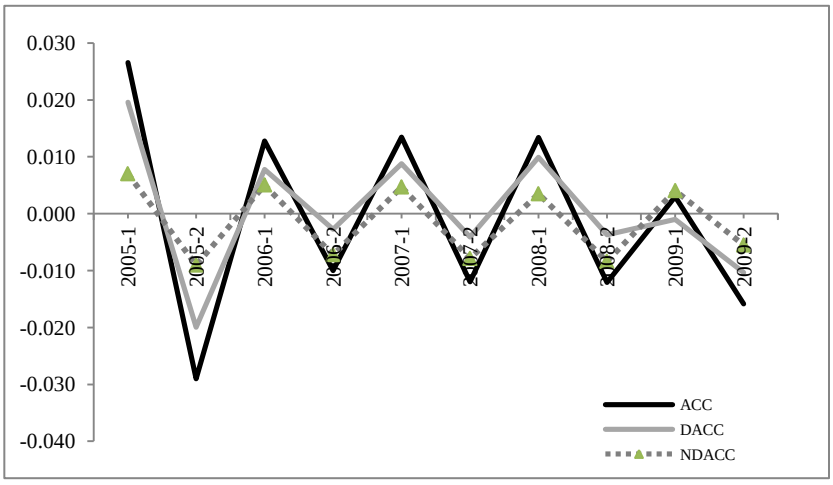


Table 7.2 shows the mean and standard deviations of independent variables including stock returns, previous stock returns, book to market, sales growth and standard unexpected earnings for interim and final year reporting. There is a big reduction in stock returns during the interim period 2007-1 to 2009-1 because of the financial crisis. The average stock return in 2007-1 is 0.088 which reduces to -0.107 in 2007-2, falling again in 2008-1 and again in 2008-2 to -0.274.

Table 7.2

Mean and standard deviation of variables by interim and final year

	SR		***SR*****$_{-1}$**		***SIZE***		***BM***		***SG***		***DACC***		***SUE***	
Period	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
2005-1	0.082	0.019	0.073	0.017	18.440	0.144	0.509	0.029	0.001	0.007	0.018	0.005	0.037	0.056
2005-2	0.093	0.016	0.081	0.015	18.404	0.110	0.478	0.023	0.056	0.007	-0.011	0.004	0.126	0.044
2006-1	0.043	0.016	0.089	0.015	18.450	0.112	0.480	0.021	0.025	0.007	0.008	0.004	0.076	0.041
2006-2	0.132	0.014	0.049	0.014	18.320	0.092	0.470	0.023	0.049	0.006	-0.006	0.004	0.114	0.036
2007-1	0.096	0.014	0.130	0.014	18.413	0.092	0.488	0.021	0.018	0.006	0.010	0.004	0.022	0.037
2007-2	-0.160	0.010	0.091	0.012	17.963	0.077	0.540	0.024	0.046	0.005	-0.001	0.003	0.143	0.031
2008-1	-0.138	0.011	-0.148	0.010	17.876	0.080	0.688	0.026	0.021	0.004	0.007	0.003	-0.007	0.034
2008-2	-0.370	0.010	-0.115	0.011	17.368	0.075	0.991	0.037	0.044	0.005	-0.001	0.003	-0.036	0.034
2009-1	0.232	0.018	-0.352	0.011	17.426	0.081	0.988	0.037	-0.015	0.005	0.000	0.003	-0.127	0.037
2009-2	0.196	0.015	0.252	0.019	17.535	0.084	0.972	0.038	0.010	0.005	-0.011	0.003	0.117	0.041

The table provides descriptive statistics for interim periods: suffix _1 is the first six months up to the interim reporting date, and _2 is the second six months up to the annual reporting date. R_t is the stock return over the six month period, R_{t-1} is the stock return over the six month period (i.e. not annualised), $SIZE_t$ *is* the natural logarithm of the market value of equity at the end of each period, BM_t is the ratio of the book value of equity to the market value of equity at the end of the period, SG_t *is* growth in half-yearly sales divided by opening total assets. SUE_t is standard unexpected earnings, i.e. the difference between second-half and first-half earnings divided by the standard deviation of all six-monthly earnings of the firm. Note: there is 5,616 firm-period observation.

Figure 7.3 shows the current and lagged stock returns during the interim period. The main reason for the fall in returns is the financial crisis during 2007-1 to 2008-2.

According to Figure 7.4, sales growth is low with a seasonal pattern. Until 2008-1 this pattern is also exhibited by standard unexpected earnings. However, the standard unexpected earnings jump down and then up between 2008-1 and 2009-1. Therefore, earnings surprises that are indicated by standard unexpected earnings are affected by the financial crisis between; 2007-1 to 2009-1. In contrast during the same period, sales growth was not severely affected by the financial crisis.

Figure 7.3 Descriptive statistics (mean) of stock return and lag of stock return

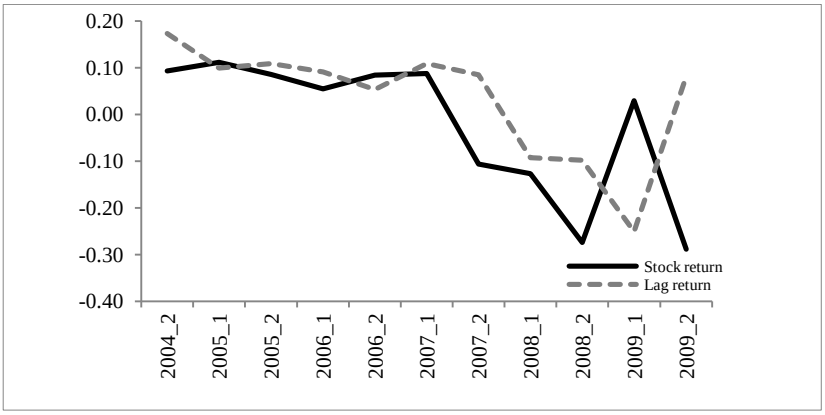
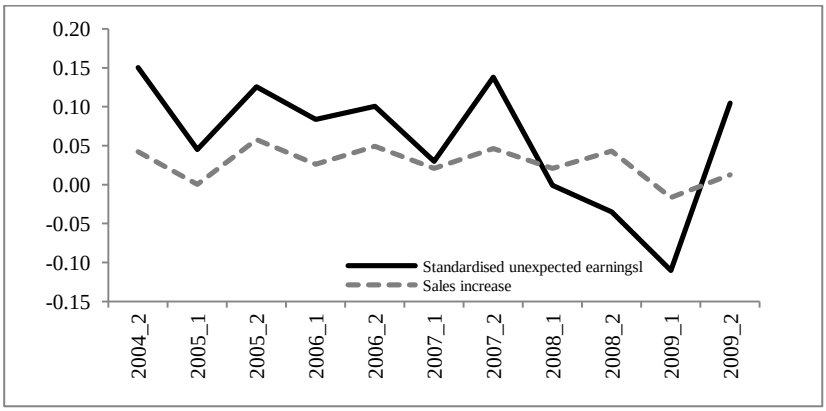


Figure 7.4 Descriptive statistics (mean) of standard unexpected earnings and lag of changes in sales



7.3 Deflated, discretionary and non-discretionary accruals in winner and loser firms.

It is important to understand about accruals behaviour in winner and loser portfolios. Table 7.3 demonstrates the amount of deflated accruals, discretionary accruals and predicted accruals for winner and loser companies for interim and final year reporting from 2004-2 to 2009-2.

According to Table 7.3 the mean value for *ACC* in the first semester for both (winners and losers) are positive whenever *ACC* in the second semester (S2) for winners and losers are negative; this is repeated for *NDACC* as well. However, this regular pattern is not exhibited by discretionary accruals (*DACC*). For example, in the second semester 2005 discretionary accruals for losers are 0.007, however at the same time winner firms have negative discretionary accruals of -0.008. This opposite pattern happens for the second semesters of 2008 and 2009 as well. The pattern of discretionary accruals for winners and losers is not the same pattern as current accruals and non-discretionary accruals.

Table 7.3
Deflated, discretionary and non-discretionary accruals in winner and loser firms

ACC:	***2005/1***	***2005/2***	***2006/1***	***2006/2***	***2007/1***	***2007/2***	***2008/1***	***2008/2***	***2009/1***	***2009/2***
Loser (1)	0.012	-0.014	0.014	-0.015	0.007	-0.012	0.018	-0.015	-0.003	-0.007
2	0.007	-0.026	0.015	-0.015	0.016	-0.012	0.012	-0.006	-0.006	-0.016
3	0.059	-0.020	0.007	-0.008	0.018	-0.013	0.003	-0.006	0.021	-0.018
4	0.025	-0.030	0.017	-0.015	0.017	-0.009	0.007	-0.016	0.007	-0.020
Winner (5)	0.023	-0.016	0.016	-0.013	0.011	-0.005	0.011	-0.004	0.003	-0.024
DACC:										
Loser (1)	0.003	0.007	0.013	-0.003	0.012	0.003	0.018	-0.003	-0.006	0.000
2	0.005	-0.019	0.007	-0.005	0.010	-0.004	0.008	0.002	-0.007	-0.011
3	0.049	-0.012	-0.002	-0.007	0.010	-0.007	0.000	0.000	0.014	-0.016
4	0.020	-0.024	0.014	-0.010	0.014	-0.001	0.005	-0.009	0.001	-0.013
Winner (5)	0.012	-0.008	0.007	-0.003	0.003	0.003	0.007	0.006	-0.004	-0.016
NDACC:										
Loser (1)	0.009	-0.021	0.001	-0.011	-0.005	-0.014	0.000	-0.012	0.003	-0.007
2	0.002	-0.008	0.008	-0.010	0.005	-0.008	0.005	-0.008	0.002	-0.005
3	0.010	-0.008	0.009	-0.001	0.008	-0.006	0.003	-0.006	0.007	-0.002
4	0.005	-0.006	0.002	-0.005	0.003	-0.008	0.002	-0.008	0.006	-0.007
Winner (5)	0.011	-0.009	0.008	-0.009	0.008	-0.009	0.004	-0.010	0.007	-0.008

'*ACC*' is the actual current accruals that is deflated by lag of total assets. '*DACC*' is discretionary accruals and *NDACC* is non-discretionary accruals that is predicted.

Figure 7.5 shows the relationship between deflated current accruals and predicted accruals in loser firms. This figure shows current accruals in interim and final semesters are systematically predicted and the pattern is quite striking

Figure 7.6 demonstrates the pattern of current accruals and predicted accruals in winner firms. This graph shows current accruals in interim and final semesters are also systematically predicted. The pattern for winners is even more striking than the pattern for losers.

Figure 7.5 Deflated and predicted accruals in loser firms

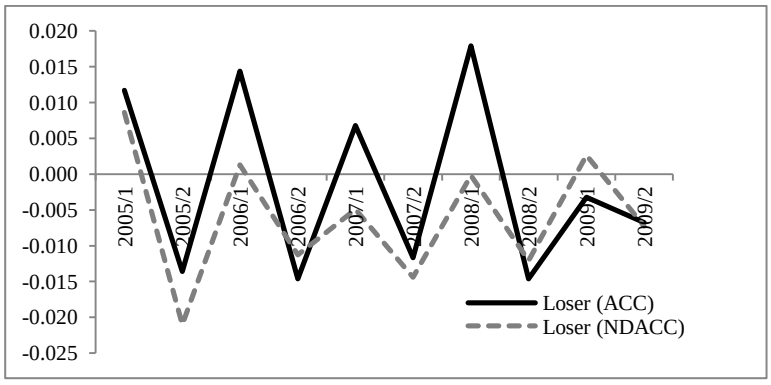


Figure 7.6 Deflated and predicted accruals in winner firms

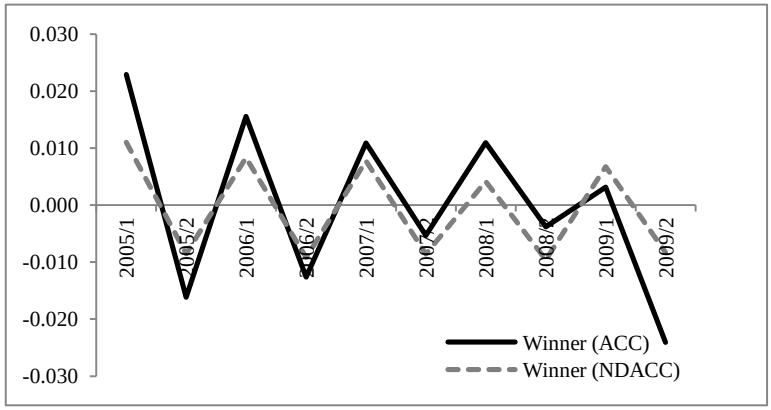


Figure 7.7 compares the relationship between deflated current accruals in winner and loser firms. This figure shows the increases and decreases in current accruals for winner and loser firms follow the same patterns between interim and final periods. Changes for winners are bigger than changes for losers. Figure 7.8 compares non-discretionary accruals for winners and losers. Predicted accruals in winner firms are less volatile domestic than for losers; this means current accruals in winner firms are more predictable than losers.

Figure 7.7 Deflated accruals of winner and loser firms

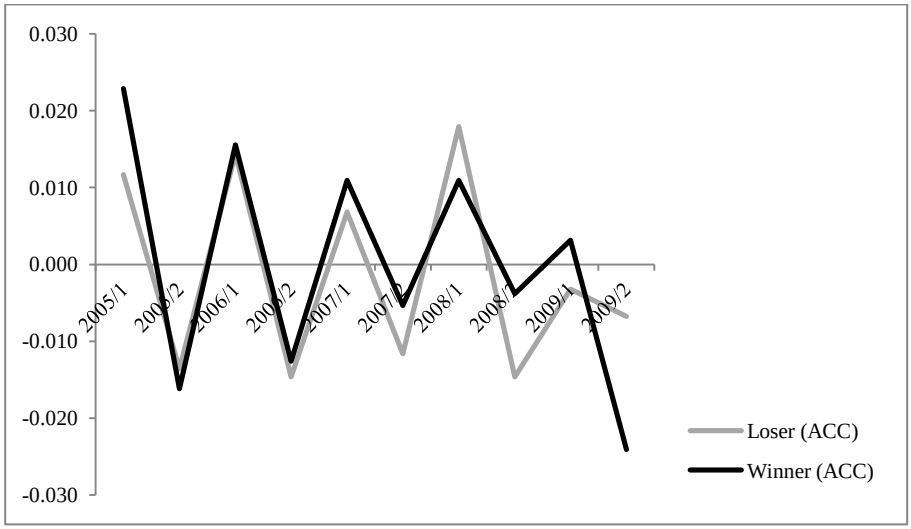
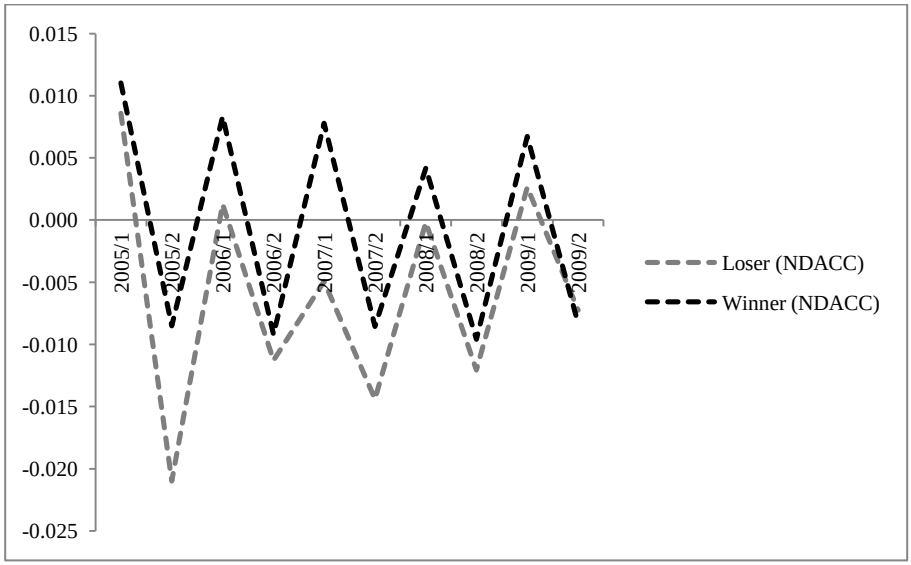


Figure 7.8 Non-discretionary accruals of winner and loser firms



Kothari et al. (2005) demonstrate how data collection problems can produce biased conclusions. They refer to two types of bias that can be introduced into the process of sample selection; these are referred to as 'passive' and 'active' data truncation. The case of passive data truncation occurs when firms that become delisted during the period of the analysis are excluded from the sample. However, the delisting of these firms is not controlled by the researchers; their exclusion from the sample is caused by the firms themselves. Active truncation occurs when researchers either delete or change the observations by trimming or winsorising[59] the collected data, usually in order to minimise the effect of extreme observations. In the present study all variables (i.e. all variables that are used in the regression analysis) are trimmed at the 1st and 99th percentiles, to ensure that outliers do not drive the results.

Table 7.4 shows the results of analysing discretionary accruals with and without using return on assets (*ROA*). Without using *ROA* all variables are significant. The R-squared for the two regressions (with and without *ROA*) are equal. The results in Table 7.4 show the coefficient on *FTA* (calculated as $1/TA_{t-1}^{i}$) in the model containing *ROA* is not significant. Therefore, in this study the regression model without *ROA* is used.

Table 7.4 shows the regression results for the equations (5.12), (5.16) and (5.16A) using *ACC* as a dependent variable. Overall the results reflect the findings in the previous section. The table demonstrates the estimation of discretionary accruals equations to create discretionary accruals variable. For the UK firms, column equation (5.12) reports the regression results for 6,917 firm-year observations; and for equations (5.16) and (5.16A) the

[59] Winsorising is a method that solves the problem of outliers by limiting extreme values in the statistical data to reduce the effect of spurious outliers. This method is defined after the engineer-turned-biostatistician Charles P. Winsor (1895–1951).

number of firm-years is 5,282. Table 7.4 shows the coefficient as the inverse lag total assets (*FTA)* in equation 5.12 is negative (-11799.090, t-statistic = -5.710, p-value <0.001). The coefficient on change in sales (*STA*) is negative and significant (-0.769, t-statistic = -40.130, p-value <0.001) which is consistent with the research of Teoh et al. (1998). The Adj R-squared for equation (5.12) is 18.9% compared with the Adj R-squared of 27% found by Teoh et al. (1998). Equation (5.16) shows the estimation of accruals using *ROA.* The result for Equation (5.16) shows the coefficient as *FTA* is positive (21873.940, t-statistic = 3.620, p-value <0.001) and the STA coefficient is similar to Equation (5.12) but with a low adjusted R-Squared (6.44%). The equation (5.16A) shows the discretionary accruals with *ROA* and seasonality effects. The related result shows the same pattern as equation (5.16). The factor of change in sales since last year (*STA_y*) is positive with t-statistic = 2.350 which is not highly significant.

Table 7.4

The estimation of the discretionary accruals equation to create the discretionary accruals variable

		Equation (5.12)		***Equation (5.16)***		***Equation (5.16A)***	
	Variables	*Coeff.*	*t-stat*	*Coeff.*	*t-stat*	*Coeff.*	*t-stat*
Intercept	*Intercept*	0.027	3.070	-0.002	-1.310	-0.002	-1.620
			0.002		*0.189*		*0.105*
Inverse lag total assets	*FTA*	-11799.090	-5.710	21873.940	3.620	21034.260	3.480
			<0.001		*<0.001*		*0.001*
Change in sales	*STA*	-0.769	-40.130	-0.146	-17.340	-0.155	-16.720
			<0.001		*<0.001*		*<0.001*
Return on assets	*ROA*			0.102	9.900	0.099	9.620
					<0.001		*<0.001*
Change in sales (since last year)	*STA_y*					0.023	2.350
							0.019
Number of observation		*6917*		*5282*		*5282*	
Adj R-squared		*18.9%*		*6.44%*		*6.45%*	

T-Stat is defined as T-Statistics. In this study, current accruals come from the following formula: $ACC_{t} = [\Delta (CA_{t} - CSI_{t}) - \Delta (CL - STD_{t})]/TA_{t-1}$. CA_t is defined as current accruals , CA_t is the Total current assets (WS#06615), CI_t is Cash and Short term Investments (WS#02001), CL_t is Total Current liabilities (WS#03101), STD_t is Short term debt and current portion of long term debt (WS#03051), TA^{l}_{t-1} is the total assets (WS#02999) from the last period, and Δ is defined as six-monthly change in the respective variables, for firm *i* and month *t.* In addition, in the current study, to calculate discretionary accruals, the regression analysis runs base under linear function as follows: $CA_t = a_1 (1/TA_{t-1}) + a_2 (\Delta SA_t - \Delta AR_t/TA_{t-1}) + \varepsilon_t$

Where ACC_t is total current accruals for firm i and six months t, ΔSA_t is the change in total sales (WS # 01001) for six months and AR_t is the total assets for the first six months, and TA_{t-1} is the total assets from the previous six months and AR^{i}_{t} is the total accounts receivable (WS#02051). Thus, discretionary current accruals are computed as follows: $DACC_t$, the differences between discretionary accruals and current accruals which is defined as result will be taken from nondiscretionary accruals. *FTA* is calculated as $1/TA_{t-1}$ and *STA* is demonstrated as $\Delta SA_t - \Delta AR_t/TA_{t-1}$.

First regression model presented without seasonality effect and second regression include seasonality effect by semester. According to equation (5.16A) in Chapter 5, change in realised sales for semester (*t*) since last semester (*t*-1) and change in realised sales for semester (*t*) since same semester last year (*t*-2) is added to regression by using variable *STA_y* to show the effect of seasonality. Therefore, new current accrual equation defined as equation (*5.16A*)

7.4 Analysis of the association between returns and other independent variables.

This study begins with the estimation of Equations (6.3), (6.5) and (6.3A) by pooling the sample for the interim and final semesters 2004-1 to 2009-2 and pooling time-series and cross-sectional data. According to Gujarati (2003), it is assumed that intercept and slope coefficients are constant across time and firms, so the error term captures differences over time and firms[60]. Therefore, the pooled regression model may distort the real picture of the relationship between the dependent and independent variables in the regression model. In chapter 7 we use the panel data analysis to show relationship between winner and loser firms and we use the Fixed and the Random Effects Model.

Table 7.5 demonstrates the main regression results (OLS) and contains the findings for the fixed effects estimation of the model developed on 5616 observations for UK firms on the baseline model, including stock return, discretionary accrual and the other variables shown in equations (6.3), (6.5) and (6.3A). Table 7.5 shows the regression results for equation (6.3). As expected, the coefficient as *DACC* is negative and significant: the coefficient is -0.159 and the t-statistic is -2.740. In equation (6.3A) this coefficient is again negative and significant: the coefficient is -0.117 and t-statistic is -2.010. As expected, there is a positive relationship between previous stock returns and current returns, the coefficients in equations (6.3) and (6.3A) are 0.027 and 0.111respectively. The t-statistics are 1.910 and 10.760, the first being weakly significant and the second strong signeficant.

[60] Gujarati (2003) shows that the assumptions of the pooled sample thatthe intercept and the slope coefficients are constant across time and firms and that the error term captures differences over time are highly restrictive.

Standard unexpected earnings are an important measure of surprise in reported earnings. In this study, to follow the effects of positive and negative surprises in earnings, two dummy variables are defined: as discussed in Chapter 6: positive discretionary accruals (*DACC_H*) and negative discretionary accruals (*DACC_L*) are defined as dummy variables in the regression model. Standard unexpected earnings have a significant, positive relationship with stock returns. The results for equation (6.3) show there is a strong positive relationship between *SUE* and *SR*, the coefficient is 0.039 and significant (t-statistic is 6.690). Also, in equation (6.3A), the *SUE* coefficient is 0.049 (t-statistic is 8.820 and significant). In equation (6.5), the two dummy variables *SUE_H* and *SUE_L* are positive and significant; the coefficients are 0.036 and 0.042 and their t-statistics are -2.740 and 6.690, both being significant. The explanatory power of standard unexpected earnings (*SUE*) is related to the other variables, exposing a question about what information investors could find in these standard unexpected earnings to drive stock returns in the short term. With regard to the implications of behavioural models, investors' overreaction to earnings would be reflected in the explanatory power of standard unexpected earnings, and would be less closely correlated to a business performance measure, or even to earnings management. As explained in the literature review, stock returns can be increased through management of discretionary accruals and such management is used to mask distressed business conditions. Therefore, if discretionary accruals are used to defer income for future periods, discretionary accruals are negative. Thus, there are motivations which may drive the cross-sectional accrual-return relation. Linear regression would not accurately provide the earnings management information during the extreme fluctuations in the returns of firms. Therefore, in Chapter 7 in the section as winner and loser portfolio analysis the technique of

'portfolio dependent classifications of winner and loser firms' is used to capture more detail of the earnings management.

Results for the control variables are consistent with findings in earlier studies and with our expectations; Li (2011) finds a positive relation between *SIZE* (as market capitalisation) and future stock returns that is consistent with this study. According to equation (6.3) the coefficient for *SIZE* is 0.022 and the t-statistic is 8.930 and significant. Again, in equation (6.3A), the coefficient for *SIZE* is significant and the coefficient and t-statistic are 0.034 and 14.580. Equation (6.3) shows that there is a negative relationship between book-to-market as a control variable and stock return; the coefficient is -0.031 and the t-statistic is -4.660 and significant. Also, in equation (6.3A) the coefficient for BM is -0.030 and t-statistic is -5.010, and significant.

Table 7.5
Regression result of association between returns and independent variables

	Equation (6.3)		***Equation(6.5)***		***Equation (6.3A)***		
	Coeff.	*t-Statistic*	*Coeff.*	*t-Statistic*	*Coeff.*	*t-Statistic*	*Fixed effects*
Intercept	-0.377	-8.280	-0.377	-8.280	-0.653	-15.120	-2.620
		<0.001		*<0.001*		*<0.001*	*<0.001*
S1*intercept*					0.729	11.080	10.480
						<0.001	*<0.001*
LSR	0.027	1.910	0.027	1.910	0.111	10.760	6.490
		0.056		*0.056*		*<0.001*	*<0.001*
S1 *LSR*					1.008	71.040	63.460
						<0.001	*<0.001*
SIZE	0.022	8.930	0.022	8.930	0.034	14.580	2.560
		<0.001		*<0.001*		*<0.001*	*0.011*
S1 *SIZE*					-0.038	-10.900	-10.480
						<0.001	*<0.001*
BM	-0.031	-4.660	-0.031	-4.660	-0.030	-5.010	-6.550
		<0.001		<0.001		*<0.001*	*<0.001*
S1*BM*					0.042	4.270	3.840
						<0.001	*<0.001*
SG	-0.007	-0.120	-0.007	-0.120	-0.002	-0.040	-1.110
		0.903		*0.903*		*0.972*	*0.266*
S1*SG*					-0.011	-0.140	0.950
						0.885	*0.344*
DACC	-0.159	-2.740	-0.159	-2.74	-0.117	-2.010	-0.72
		0.006		*0.006*		*0.044*	*0.469*
S1DACC					0.121	1.440	0.000
						0.149	*0.998*
SUE	0.039	6.690			0.049	8.820	4.940
		<0.001				*<0.001*	*<0.001*
S1*SUE*					-0.050	-6.020	-6.370
						<0.001	*<0.001*
*SUE_**H***			0.036	-2.740			1.320
				0.006			*0.187*
*SIUE_**L***			0.042	6.690			
				<0.001			
Adj R-squared	*3.50%*		*3.50%*		*50.92%*		*50.42%*
within							49.53%
between							43.20%
Prob>F							*<0.001*

All variables that are used in the regression association between returns and other independent variables are trimmed at the 1st and 99th percentiles, to ensure that outliers do not drive the results.

***, **, * Statistical significance at the 0.01, 0.05 and 0.10 level of significance.

The number of observation for all equation is 5,616 firm-period observations.

Appendix C shows the summary statistics of UK non-financial firms by industry for the equation (6.3) and (6.3A). According to the information in this table, industrial firms comprise the largest group followed by utility and then transportation. This table contains the results of regressions showing the association between returns and the independent variables for each group of firms. There is a significant relationship between stock returns and all independent variables such as past returns, size, book-to-market, sales growth, unexpected earnings and discretionary accruals in the industrial group. According to equation (6.3) and (6.3A), there is a negative relationship between discretionary accruals and stock returns; for the industrial sector the coefficients are -0141 and -0.134 respectively (both significant). For other sectors very little is not significant. Standard unexpected earning is assumed to be an important factor, investors expecting the sign for this variable to be positive. The table shows the coefficients on *SUE* are 0.040 and 0.051 and they are significant. Generally, the results show that returns for the industrial group are well explained by the independent variables.

A large number of early studies of combined data from multiple subjects use the 'fixed-effect' method. This method only takes into account within-subject variability. This model is used to report results from case studies. It is not possible to make formal conclusions about population effects using this method, unlike 'random-effect' analysis which takes into account both sources of variation and makes it possible to make formal inferences about the population from which the subjects are drawn. Fixed effect models make it possible to control for variables that cannot be measured. Eisenhart (1947, pp. 3-5) divides detection and estimation into different classes as follows:

"*Class I: detection and estimation of fixed (constant) relations among means of sub-sets of the universe of objects concerned"*.

This class includes all the usual problems of estimating and testing to determine whether to infer the existence of true differences among "treatment" means, among "variety" means, and, under certain conditions, among "place" means. In this class all of the problems of univariate and multivariate regression are included. With regard to problems of estimation belonging to this class, analysis of variance is simply a form of the method of least squares.

"*Class II: detection and estimation of components of (random) variation associated with a multiple population"*.

This class includes all problems of estimating, and testing to infer the existence of, components to random deviation. The regressions are run under the assumption that the intercept and coefficient remain constant across firms. Therefore, there are systematic differences among firms. These firm variations can be controlled by applying an

econometric method that is called the fixed effects controller. The individual-level of variable effects are controlled by the independent variables which are nominated as fixed effects. This model permits variations to the intercept across companies. However, the coefficients remain constant across firms. There is another econometric method for panel data mentioned above which is the random effect estimator. This estimator considers that the individual-level effects are not correlated to the independent variables; hence, the random effect model is more efficient than the fixed effect model.[61]

Table 7.6 presents the summary of the estimation using the random and fixed effect model estimation and Hausman result test for equations (6.3) and (6.3A). According to this table, the coefficient of the random model is similar to the main regression model, all predictor variables are significant, the sign is the same and the R-adjusted is close to the main regression model. As explained above, to select the fixed or random effect model for estimation, Hausman's test is run. Table 7.6 also presents the result of Hausman's test, which tests whether a fixed effect or random effect model is better for the specific regression in which this model is used. This table shows the difference in the coefficients of the two models estimated by this test (*Chi2=47.42, <0.001)* , and demonstrates that, for this research, using the fixed effect model is better than the random effect model.

[61] To examine whether a fixed effect or random effect model is better for specific research, researchers use Hausman's test. If the result of this test is rejected, it means that the random effects model is biased; therefore the correct estimation model would be the fixed effects model

Table 7.6
Fixed and random effect analysis of equation (6.3) and (6.3A

	Effects		Hausman test	
	Fix	***Ran***	***Diff. (F-R))***	***sqrt****
Intercept	-0.467	-0.652		
	0.012	*<0.001*		
intercep_S1	0.717	0.722	-0.005	0.021
	<0.001	*<0.001*		
LSR	0.077	0.101	-0.024	0.006
	<0.001	*<0.001*		
S1 LSR	1.010	1.011	-0.001	0.007
	<0.001	*<0.001*		
SIZE	0.025	0.034	-0.009	0.010
	0.013	*<0.001*		
S1 SIZE	-0.038	-0.038	0.000	0.001
	<0.001	*<0.001*		
BM	-0.061	-0.033	-0.028	0.007
	<0.001	*<0.001*		
S1BM	0.040	0.041	-0.001	0.004
	<0.001	*0.864*		
SG	-0.070	-0.009	-0.061	0.033
	0.275	*0.964*		
S1SG	0.090	0.004	0.086	0.054
	0.357	*0.050*		
DACC	-0.052	-0.117	0.065	0.039
	0.463	*0.216*		
S1DACC	0.000	0.109	-0.109	0.066
	0.997	*<0.001*		
SUE	0.055	0.050	0.004	0.003
	<0.001	*<0.001*		
S1SUE	-0.064	-0.054	-0.009	0.005
	<0.001	*<0.001*		
R-sq: within	0.495	0.493		
Between	0.431	0.467		
Prob > chi2	*<0.001*	*<0.001*		
Number of obs	5616	5616		
*Chi2**			*47.42*	
Prob>chi2			*<0.001*	

Note: Table 7.6 provides estimation of fixed and random effect analysis and also provides Hausman test .

*Hausman test; H0: difference in coefficients not systematic. The number of observation for all equation is 5,616 firm-period observations.

***** Covariance matrix estimate that it calls *sqrt*

7.5 Analysis of winner and loser firms

In the previous chapter, regression analysis shows there is a relationship between short-term returns and accruals, as proposed by the hypothesis of this study. Two testable implications result from the hypothesis presented in Chapter 4. First, past returns (over the first semester) are positively correlated with future earnings management; second, discretionary accruals and future returns (over the second semester) are positively related to contemporaneous discretionary accruals. This chapter provides regression results showing earnings management using discretionary accruals. Companies are grouped into winners and losers by classifying them into quintiles based on their returns over the first half year (months 1 to 6). Then they are formed as portfolios by equally weighting firms in each quintile. The correlation between the variables is found via the statistical significance of the differences in discretionary accruals over the second six-month period (month 7 to 12) among these quintiles.

The second step considers the significance of standard unexpected earnings and sales growth among these quintiles to see if the assumptions that are made in the hypothesis can be supported. The sample is classified into quintiles based on returns over the months 1 to 6 (first semester), and portfolios are formed by equally weighting firms in each quintile. The statistical significance of the differences in discretionary accruals over the 7 to 12 month period (second semester) among these quintiles is then considered. As mentioned above, the statistical significance of standard unexpected earnings and sales growth among these quintiles is examined to see whether the assumptions made in the hypotheses are supported.

Table 7.7 presents summary statistics for quintiles of data sorted by lagged stock return. The table also presents the descriptive statistics of the variables. Portfolios formed and classified based on previous stock return continue to have the same classification for the following six months. The top of portfolio is defined as 'winner' firms and the bottom is called 'loser' firms. This sample covers all industries except financial firms. In this study, winner and loser companies are classified based on their past six months' stock returns, and is also defined as the lag of stock returns (R_{t-1}) into equal-weighted quintiles at the same time. Chan et al (2006) classified characteristics of stocks by accruals to 10 equal-sized portfolios. In the portfolio of the highest-ranked stocks they show accruals average 18.9%, whereas in the portfolio of the lowest-ranked, accruals are -16.2%. In Table 7.7 the highest-ranked (winner) has 10.1% accrual average and in lowest-ranked it is -10.3% and it is negative that is similar with the result of Chan et al (2006). Also, they find earnings in top decile portfolio 17.6% but only 7.1% for the bottom decile of portfolio. We found unexpected earnings for winner (top quintile) 9.5% and for bottom (loser) -3.2%

Table 7.7

Summary statistics for quintiles of data (firms sorted by lagged stock return)

Variables		***L***	***2***	***3***	***4***	***W***
R	*Mean*	-0.004	-0.008	0.011	-0.001	-0.016
	Std. Dev.	*0.416*	*0.375*	*0.390*	*0.371*	*0.377*
R_{t-1}	*Mean*	0.016	-0.014	-0.021	-0.002	0.001
	Std. Dev.	*0.391*	*0.355*	*0.361*	*0.359*	*0.396*
SIZE	*Mean*	17.503	17.986	18.242	18.212	17.598
	Std. Dev.	*2.116*	*2.193*	*2.223*	*2.162*	*2.029*
BM	*Mean*	0.612	0.790	0.811	0.719	0.608
	Std. Dev.	*0.833*	*0.841*	*0.795*	*0.732*	*0.752*
SG	*Mean*	0.024	0.025	0.017	0.027	0.036
	Std. Dev.	*0.162*	*0.116*	*0.091*	*0.109*	*0.149*
ACC	*Mean*	-0.115	-0.026	-0.001	0.025	0.106
	Std. Dev.	*0.076*	*0.010*	*0.006*	*0.010*	*0.068*
DACC	*Mean*	-0.094	-0.025	-0.015	0.005	0.063
	Std. Dev.	*0.138*	*0.095*	*0.068*	*0.082*	*0.129*
$DACC_{t-1}$	*Mean*	-0.103	-0.022	0.000	0.025	0.101
	Std. Dev.	*0.071*	*0.021*	*0.015*	*0.021*	*0.069*
SUE	*Mean*	-0.032	0.009	0.035	0.088	0.095
	Std. Dev.	*0.969*	*0.958*	*0.881*	*0.876*	*0.879*
Obs		*1124*	*1123*	*1123*	*1123*	*1123*

Table 7.7 shows the summary statistics for quintiles of data that is sorted by accruals. The first quintile (lowest quintiles) is defined as loser companies, and the fifth quintile (upper quintile) are defined as winner companies. This table shows the characteristics of means and standard deviations of companies at five levels. Stock Return (*R*) is computed over all months from 1/2004 to 12/2009 using Datastream closing prices (Datastream # UP # S) and dividends (Datastream # DI), and there is a difference between the closing price (plus dividends) at the end of each half-year interim reporting period and the natural logarithm of the price at the beginning of the interim reporting period (SR may also be computed directly from the Datastream total return index, but with less accuracy); Size is the natural logarithm of the year-end market capitalisation (Worldscope # 08001, closing price x number of shares). Book-to-market (*BM*) is the natural logarithm of the ratio of common equity to market capitalisation (Worldscope # 09704); sales growth (*SG*) is measured as the six-monthly change in sales and deflated by total assets at the end of the current period (Worldscope # 01001); the current accrual (*ACC*) is the six-monthly change in net current operating assets, i.e. current assets (Worldscope # 02201) excluding cash (Worldscope # 02003) minus current liabilities (Worldscope # 03101) excluding the current portion of long-term debt (Worldscope # 03051) and deflated by total assets at the end of the current period (Worldscope # 02999). Although, *ACC* is referred to the current accrual, it is effectively a net amount which comprising revenue accruals, expense accruals, revenue deferrals and expense deferrals; the discretionary current accrual (*DACC*) is the residual from the cross-sectional regression of *ACC* on a constant scaled by the total assets, six months earlier. It should be noted that positive accrual is an income-increasing factor, and negative accrual is an income-decreasing factor.

Table 7.8 ranks the return for each period by the lag of stock returns in the previous interim period. Portfolios are formed for each interim period for the UK firms between 2005 and 2009. Mean, standard deviation and number of observations for each interim and final year period are presented. The highest average stock return is for winner firms 0.223 relating to the final period of 2009 and the lowest one is -0.373 that is related to final year of 2008. For loser firms, the highest return is 0.442 during the interim period of 2009 and the lowest average return is -0.407 and during the final period of 2008. The big fluctuations in return during 2008 are and 2009 because of the financial crisis.

Thomas and Zhang (2002) show an increase in accounts payable can be an early warning sign of deterioration in cash flow and it can give signals of poor stock price performance in the future. In summary, inventory changes are the dominant component of accruals for predicting returns. Thus, changes in accruals payable have some predictive power. In addition, the non-uniform impact of changes in accruals suggests that managers are manipulating earnings.

Table 7.8
Summary statistics for quintiles of return data (firms sorted by lagged stock return)

		L(1)	***2***	***3***	***4***	***W(5)***
2005-1	*Mean*	0.059	0.149	0.080	0.047	0.078
	Std. Dev.	0.357	0.340	0.161	0.183	0.307
	Obs	*45*	*44*	*44*	*44*	*44*
2005-2	*Mean*	0.010	0.031	0.106	0.197	0.119
	Std. Dev.	0.390	0.239	0.233	0.209	0.345
	Obs	*74*	*74*	*74*	*74*	*74*
2006-1	*Mean*	-0.026	-0.022	0.065	0.066	0.133
	Std. Dev.	0.372	0.311	0.206	0.227	0.328
	Obs	*74*	*74*	*74*	*74*	*73*
2006-2	*Mean*	0.038	0.149	0.162	0.136	0.175
	Std. Dev.	0.401	0.343	0.216	0.250	0.303
	Obs	*107*	*107*	*106*	*107*	*106*
2007-1	*Mean*	0.036	0.096	0.107	0.145	0.097
	Std. Dev.	0.419	0.273	0.271	0.259	0.330
	Obs	*108*	*107*	*107*	*107*	*107*
2007-2	*Mean*	-0.228	-0.173	-0.117	-0.130	-0.150
	Std. Dev.	0.306	0.246	0.213	0.271	0.285
	Obs	*147*	*147*	*147*	*147*	*146*
2008-1	*Mean*	-0.233	-0.147	-0.140	-0.101	-0.068
	Std. Dev.	0.273	0.370	0.245	0.275	0.266
	Obs	*140*	*140*	*139*	*140*	*139*
2008-2	*Mean*	-0.407	-0.393	-0.335	-0.342	-0.373
	Std. Dev.	0.309	0.259	0.253	0.252	0.280
	Obs	*157*	*156*	*157*	*156*	*156*
2009-1	*Mean*	0.442	0.294	0.221	0.134	0.065
	Std. Dev.	0.557	0.536	0.451	0.379	0.293
	Obs	*139*	*138*	*138*	*138*	*138*
2009-2	*Mean*	0.161	0.193	0.211	0.192	0.223
	Std. Dev.	0.409	0.356	0.343	0.375	0.450
	Obs	*137*	*136*	*137*	*136*	*136*

Summary statistics for quintiles of data is sorted by pervious stock return. The first quintile (lowest quintiles) is defined as loser companies and it is shown by (L), and the fifth quintile (upper quintile) is defined as winner companies (W).

7.6 Portfolio formation methods

This section describes the portfolio formation methods. Stocks are segregated into quintile portfolios on each portfolio formation date based on the ascending rank of the stocks' past stock six month performance. To study the impact of earnings momentum on price momentum, we first create earnings portfolios that capture the post-earnings announcement drift phenomenon. For each period, we sort all firms into quintiles based on their *SUE* from the most recent earnings announcement.

Table 7.8 gives the current six month returns using the *basic accrual estimation*, where quintiles are formed from *past six month returns* (SR_{t-1}). We form 5 price momentum portfolios based on past returns. Thus, for each period t, we rank all stocks with returns for period t through t_{-1} into quintiles based on their formation period returns. The momentum portfolios are formed by equally weighting all firms in the quintile rankings. Our momentum portfolios follow the approach of Jegadeesh and Titman (1993) and Chordia and Shivakumar (2005)[62]. Chordia and Shivakumar demonstrate that over the entire sample period from January 1972 through December 1999, the monthly holding-period returns increase from 0.84% for the lowest past-return portfolio, P1, to 1.60% for the highest past-return portfolio, P10. The result of Table 7.8 shows that returns increase from -4.10% for the lowest past-return portfolio, L (1), to 1.31% for the highest past-return portfolio, W(5). The returns to the WML portfolio are consistent with positive in all periods except interim

[62] Chordia and Shivakumar (2005) focus on earnings momentum on price momentum; they first create earnings portfolios that capture the post-earnings announcement drift phenomenon. They sort all NYSE-AMEX firms on the monthly Center for Research in Security Prices (CRSP) files with data on COMPUSTAT into deciles based on their SUE from the most recent earnings announcement. They sort firms into deciles based on current-quarter earnings less earnings four quarters ago. For cross-sectional comparison, They standardize this change in earnings by the standard deviation of the earnings changes in the prior eight quarters

period of 2009-1. Figure 7.1 shows the price momentum behaviour during the period. In 2009-1 after financial crises the return of L (1) is more than W (5). The difference in returns between the winner and the loser past-return portfolios, WML, is a statistically significant in most periods; see 2005-2, 2006-1, 2006-2, 2007-2, 2008-1 and 2009-1. For example in 2006-1 the WML is 1.60 % and the t-statistic is 2.759 and it is significant. This result is consistent with Grundy and Martin (2001) who document a payoff of 0.86% per month over the sample period 1962 to 1995. While there is wide variation in the average six monthly returns to WML across the sub periods, we are unable to reject the null that the payoffs are the same across the periods.

Table 7.9
The current six month returns, where quintiles are formed from *past six month return*

Period	*L(1)*	*2*	*3*	*4*	*W(5)*	*WML*	*T-Stat*
2005/1	0.059	0.149	0.08	0.047	0.078	0.019	0.268
2005/2	0.01	0.031	0.106	0.197	0.119	0.109	1.800**
2006/1	-0.026	-0.022	0.065	0.066	0.133	0.16	2.759**
2006/2	0.038	0.149	0.162	0.136	0.175	0.137	2.814**
2007/1	0.036	0.096	0.107	0.145	0.097	0.061	1.194
2007/2	**-0.228**	-0.173	-0.117	-0.13	**-0.15**	0.078	2.261**
2008/1	**-0.233**	-0.147	-0.14	-0.101	**-0.068**	0.165	5.109**
2008/2	**-0.407**	-0.393	-0.335	-0.342	**-0.373**	0.034	1.019
2009/1	0.442	0.294	0.221	0.134	0.065	-0.377	-0.272**
2009/2	0.161	0.193	0.211	0.192	0.223	0.062	1.19

The price momentum portfolio is sorted based on the returns in the prior six-month period. The portfolios are held for the following six-month period (SR_{t-1}).

The table reports the returns to these portfolios as well as the payoffs from a strategy of being long the highest portfolio W(5) and short the lowest portfolio L(1).

Note, "*WML*" is defined as the mean differences between winner and loser firms and "T-Stat" demonstrates the T-Statistics of these differences. According to the returns, all stock are ranked to five levels. ** denotes significance at the 1% level. "According to the returns, all stock are ranked to five levels. *LMW* means losers minus winners.

Figure 7.9 Price momentum winner and loser firms

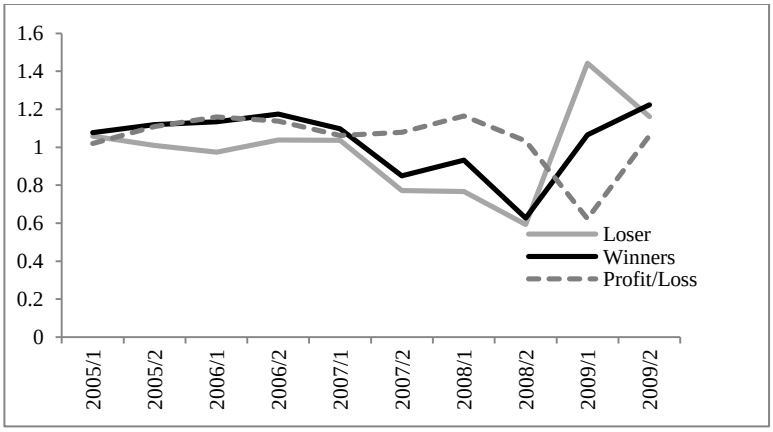
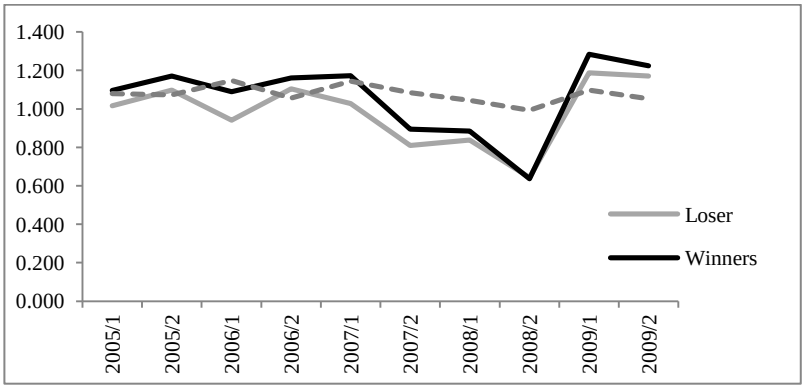


Figure 7.10 Earnings momentum winner and loser firms



We also sort firms into quintiles based on current-six month earnings. Table 7.10 gives the current six month returns using the basic accruals estimation where quintiles are formed on *past six month unexpected earnings* (SUE_{t-1}). According to the most recent earnings surprise, measured as standardized unexpected earnings (*SUE*) following standard practice in the post-earnings announcement drift literature, we sort firms into quintiles portfolios base on *past six month unexpected earnings* and then examine whether being long the highest earnings surprise portfolio and short the lowest earnings surprise portfolio captures exhibits momentum. For cross-sectional comparison, we standardize this change in earnings by the standard deviation of the earnings changes in the prior six month. Our methodology is consistent with prior studies in accounting that investigate post- earnings drift (see, e.g., Chordia and Shivakumar, 2005). We implement this for each interim period using the same methodology as Chan et al. (2006). We form quintile portfolios, which we also refer to as *SUE* portfolios, by equally weighting all firms in the quintile rankings. Table 7.10 presents the returns on the SUE portfolios. Over the entire sample period from 2004 to 2009, the six monthly holding-period returns increase from -35.6% for the lowest *SUE* portfolio, *L(1),* to 28.4% for the highest *SUE* portfolio, *W* for interim period 2006-1. The difference in returns between the highest and the lowest *SUE* portfolios, *WML*, is a statistically significant, the t-statistic bing 3.11. These result are consistent with the result that exhibited by Chordia and Shivakumar (2005). Figure 7.10 is provided according to table 7.10. The figure demonstrates the earnings momentum behaviour during the interim and final year period. In 2008-2 after a financial crises the return of *L(1)* is more than *W(5).* We use the portfolio *WML* to study the impact of the post-earnings announcement drift

phenomenon on stock returns. We refer to this portfolio as the portfolio WML to signify that the difference between extreme *SUE* portfolios represents positive minus negative earnings changes. In most of the periods the difference in the six monthly holding-period returns between the winner and the loser *SUE* portfolio is statistically significant, and we are able to accept the null that the *WML* returns are the same across sub periods.

To follow the price momentum on yearly basis Table 7.11 is provided. In this table we use the *current six month and next six month returns* as one year return where quintiles are formed from *past six month returns*.

Table 7.10

The current six month returns where quintiles are formed on past six month *unexpected earnings*

Period	*L(1)*	*2*	*3*	*4*	*W(5)*	*WML*	*T-Stat*
2005/1	0.016	0.098	0.133	0.07	0.096	0.08	1.255
2005/2	0.098	0.036	0.126	0.091	0.171	0.073	1.258
2006/1	-0.058	0.066	0.025	0.093	0.089	0.147	3.238**
2006/2	0.105	0.169	0.142	0.123	0.161	0.056	1.27
2007/1	0.027	0.096	0.081	0.104	0.172	0.145	3.114**
2007/2	-0.19	-0.16	-0.172	-0.164	-0.106	0.084	2.116**
2008/1	-0.161	-0.153	-0.14	-0.119	-0.116	0.045	1.272
2008/2	-0.356	-0.354	-0.414	-0.369	-0.364	-0.008	-0.234
2009/1	0.187	0.204	0.273	0.211	0.284	0.097	1.740**
2009/2	0.171	0.179	0.25	0.155	0.224	0.052	1.114

For each interim period, firms are sorted into quintiles based on their standardized change in earnings from the most recent earnings announcement (*SUE* portfolios).

In each period, *SUE* portfolios are computed using all earnings announcements made in the prior period. The standardized unexpected earnings (*SUE*) is computed as follows; $SUE_t = EPS_t - EPS_{t-1} / \sigma_{,t}$ where SUE_t is difference between second half and first half earnings divided by standard deviation of each firms, EPS_{t-1} is the second half of earnings (Worldscope#05251), EPS_{t-1} is the first half of earnings and $\sigma_{,t}$ is the standard deviation of the unexpected earnings per share (EPS).

The portfolios are held for the following six-month period. The table reports the returns to these portfolios as well as the payoffs from a strategy of being long the highest portfolio W(5) and short the lowest portfolio L(1). The table also reports the p-value from F-test for test of equality of payoffs across sub-periods. "*WML*" is defined as the mean differences between winner and loser firms and also "T-Stat" demonstrates the T-Statistics of these differences. According to the returns, all stock are ranked to five levels ** denotes significance at the 1% level.

Table 7.11 and Figure 7.11 give one year returns (the current six month and the next six months) where quintiles are formed on past six month returns (SR_{t-1}). The pattern in returns between the winner and the loser past-return portfolios is similar to that in Table 7.8 for price momentum *WML* is a statistically significant variable in most period.

Table 7.12 demonstrates current six month returns where quintiles are formed from past six month discretionary accruals (*DACC*). Unlike the results in Chan et al (2006) the results for all interim and final periods show insignificant differences between losers and winners. Figure 7.12 shows these differences clearly; most of the time the winner and loser lines overlap and the differences are zero.

Table 7.11

One year returns (*the current six month and the next six months*) where quintiles are formed from *past six month returns*

Period	*L(1)*	*2*	*3*	*4*	*W(5)*	*WML*	*T-Stat*
2005/1	0.185	0.264	0.216	0.169	0.28	0.095	0.582
2005/2	0.038	0.083	0.129	0.309	0.252	0.214	2.072**
2006/1	0.073	0.076	0.25	0.28	0.347	0.274	2.837**
2006/2	0.104	0.22	0.298	0.235	0.34	0.235	2.631**
2007/1	-0.162	-0.071	-0.06	-0.004	-0.087	0.075	1.196
2007/2	-0.362	-0.249	-0.166	-0.196	-0.232	0.13	2.915**
2008/1	-0.599	-0.48	-0.47	-0.383	-0.408	0.191	5.521**
2008/2	-0.245	-0.267	-0.213	-0.227	-0.199	0.046	0.861
2009/1	0.889	0.622	0.463	0.329	0.237	-0.651	-6.280**

Table 7.11 demonstrates the *current six month and next six month returns* as one year return where quintiles are formed from *past six month returns* (SR_{t-1}). "*WML*" is defined as the mean differences between winner and loser firms and also "*T-Stat*" demonstrates the T-Statistics of these differences. According to the returns, all stock are ranked to five levels. ** denotes significance at the 1% level.

Table 7.12
Current six month returns where quintiles are formed from past six month discretionary accruals

Period	*L(1)*	*2*	*3*	*4*	*W(5)*	*WML*	*T-Stat*
2005/1	0.125	0.054	0.110	0.058	0.063	-0.062	-0.857
2005/2	0.034	0.137	0.091	0.116	0.145	0.111	1.728
2006/1	0.044	0.027	0.046	0.070	0.028	-0.016	0.284
2006/2	0.168	0.199	0.100	0.115	0.118	-0.050	-0.989
2007/1	0.087	0.114	0.151	0.022	0.107	0.020	0.421
2007/2	**-0.179**	-0.134	-0.149	-0.168	**-0.162**	0.017	0.421
2008/1	**-0.137**	-0.113	-0.126	-0.159	**-0.154**	-0.018	-0.491
2008/2	**-0.370**	-0.366	-0.377	-0.355	**-0.390**	-0.020	-0.574
2009/1	0.206	0.278	0.194	0.240	0.241	0.034	0.620
2009/2	0.188	0.202	0.190	0.225	0.175	-0.014	-0.264

"*WML*" is defined as the mean differences between winner and loser firms and also "*T-Stat*" demonstrates the T-Statistics of these differences.

Figure 7.11 Current year returns (the current six month plus next six month) ranked base on accruals by *LSR*

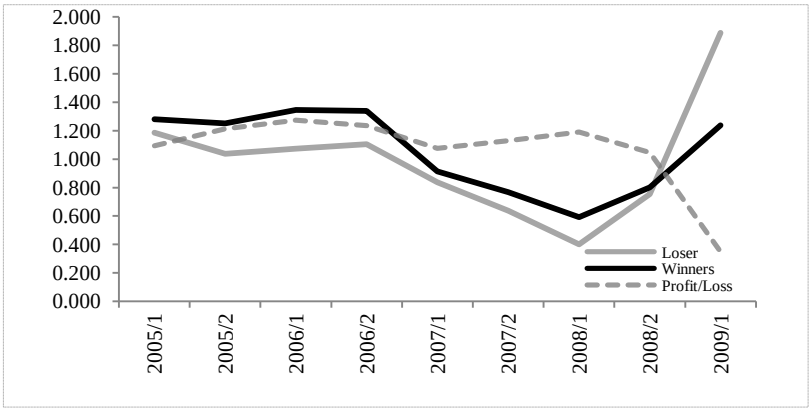
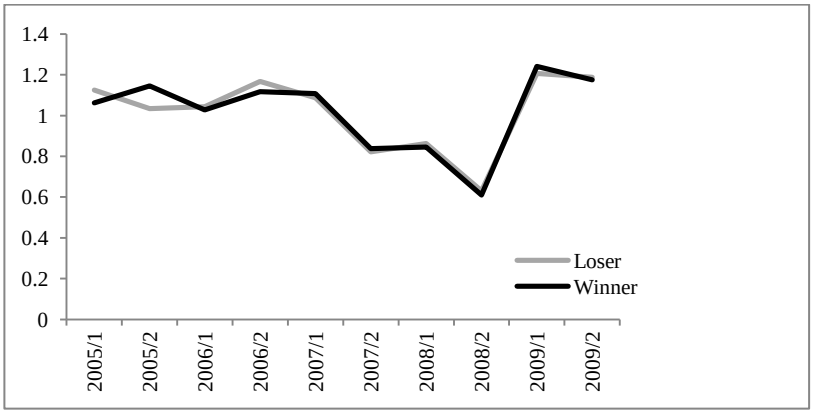


Figure 7.12 Current six month returns where quintiles are formed from past six month discretionary accruals *DACC*



7.7 Econometric techniques

The Ordinary Least Square (OLS) method is used to estimate most of the models employed in the study. Several econometric techniques are employed check the OLS regressions and to achieve the aims of the study. The following model and assumptions underlie the method of Ordinary Least Square (see Gujarati, 2003):

$Yi = ß_0 + ß_1X_{1i} + ß_2X_{2i} + Ɛ_i$

Where $ß_0$ is the intercept, Y_i is the dependent variable, X_i is the independent variable (s) and $Ɛ_i$ is the error term (the disturbance). There are some assumptions underlying the OLS method as follows:

a. The mean or expected value of the random disturbance term $Ɛ_i$ is zero.

b. The variance of the error term $Ɛ_i$ is the same for all observations (the disturbances are homoscedastic and no heteroskedasticity).

c. Given any two X values, X_i and X_j ($_{i\ j}$), the correlation between any two $Ɛ_i$ and $Ɛ_i$ ($_{i\ j}$) is zero (there no autocorrelation exist)

d. No correlation between the disturbances and any independent variable is expected.

e. There is no specification bias or error in the model regression used in the empirical analysis.

f. There are no perfect linear relationships among the explanatory variables (multicollinearity).

In this section an explanation of each econometric technique briefly is offered as follows: In OLS regression, independent variables can be correlated. When two variables both strongly predict a third variable then it can be expected that the first two variables are correlated (Bernard and Russell, 2006). Other words, multicollinearity is a condition where independent variables are strongly correlated with each other. When multicollinearity exists in the model, very high standard errors and low t- statistics may appear in the results. This problem may results is invalid results for individual predictors, or suggest same predictors.

For the main model (6.3A), Table 7.13 presents the VIF results of multicollinearity test to check this issue. This Table illustrates multicollinearity is not a significant concern as most of the variables have a *VIF* ratio of less than 4 and a 1/*VIF* ratio of greater than 0.25[63].

Table 7.13 Multicollinearity test

	Variable	**VIF**	**1/VIF**
Sales growth	SG	1.15	0.87
Discretionary Current accruals	DACC	1.15	0.87
Stock return(Lag)	LSR	1.02	0.98
Firm size	SIZE	1.02	0.99
Standard unexpected earnings	SUE	1.01	0.99
Book to market value	BM	1.00	1.00

[63] The variance inflation factor (VIF**)** is a measure that can guide a researcher in identifying multicollinearity in an ordinary least squares regression analysis. It presents an index that measures how much the variance of an estimated regression coefficient will increase because of collinearity.

Another assumption in OLS is that error terms that is homoskedastic, and is independent (serially uncorrelated). When the standard deviations of a variable, monitored over a specific amount of time, are non-constant then heteroskedasticity exists. Heteroskedasticity often appears in two ways, conditional and unconditional. Conditional heteroskedasticity is defined as non-constant volatility when future periods of high and low volatility cannot be identified. Unconditional heteroskedasticity is employed when future periods of high and low volatility can be identified. Table 7.5 shows the p-value for Equatoins (6.3), (6.5) and (6.3A). Exept for sales growth (*SG*) and the lag of stock return (*LSR*) the p-values for the remaning variables are less than is 0.05 or smaller, then the null hypothesis is rejected and there is evidence that there is no heteroskedasticity.

7.8 Summary

In this chapter linear regression results of association between returns and other independent variables are presented. The results show that apart from sales growth the independent variables are significantly associated with stock returns. Hausman's test is used to determine that the fixed effect model is superior to the random effect model. To find the behaviour of winners and losers, stock return data portfolios are formed and momentum strategies are followed. The portfolios are formed by equally weighting firms in quintiles and the winner and loser quintiles are analysed. The results show winners and losers can use discretionary accruals to manage earnings.

Chapter 8

Conclusions and suggestions for future research

The earnings number has conventionally been the focus of analysts, investors, and researchers, however other items of financial statements have generally been overlooked. Other items of financial statements may provide information about the management of a firm's earnings and be associated with stock returns. This thesis calls attention to the potential relevance of interim reporting and price momentum, borrowing from the empirical accounting literature. It finds that the association between accruals and future stock returns is reliable and negative. Also, the behaviour of accruals plays an important role in the connection between earnings surprises and stock returns. In the empirical finance literature review, the association between surprises in earnings via standard unexpected earnings and stock returns has been documented as an aid to forming investment strategies.

In earlier research what is less well documented is that the relationship between accounting earnings and stock returns must include the behaviour of accruals and that the relationship is significant using short-term data: quarterly data (Shivakumar, 2006) and semester data (this thesis). Changes in earnings that are accompanied by high accruals are associated with stock returns. Therefore, current (working capital) accruals may present information about the managing of earnings. This study demonstrates that contemporaneous discretionary accruals, plus size and book-to-market variables as risk

control variables, can significantly explain current returns and a semester by semester basis.

We find interim report accruals are negatively related to future stock returns (as first documented by Sloan (1996) and extended by Chan et al (2006)). Firms with large accruals exhibit high level of past earnings. They continue to show growing earnings even as accruals are high, and only in the next period do earnings deteriorate. As a result, the time-series behaviour of accruals and operating performance for firms with the largest accruals give strong evidence that managers can manage or manipulate earnings, and they can mislead the market initially. Other things being equal, a positive relationship exists between discretionary accruals and stock returns, indicating that returns are deliberately managed by managers. These results support the main hypothesis. The results demonstrate that standard unexpected earnings (*SUE*) have a strong relationship with contemporaneous returns. The analysis also shows a positive relationship between earnings and stock returns.

Earnings management is done to avoid decreases and losses in earnings in future periods, or because of pending corporate actions such as acquisitions. Finding how upward earnings management impacts returns portfolios versus downward earnings management is crucial to understanding the factors causing managers to manipulate earnings. It is expected that firms manage accruals in order to have optimum performance during the period. It is also expected that firms manage earnings to meet changes in business conditions. Firms that do not manage earnings may not be able to continue their returns pattern.

To investigate the existence of earnings management, regressions are run for all data in the main models outlined in the methodology section of this study. When the regressions for ‘winners’ and ‘losers’ are run, the results show the relationship between variables for

'winners' is more significant than for 'losers'. It is demonstrated that past returns (over six months) are significantly related to discretionary accruals.

Dummy variables in the regression allow the effect of positive and negative independent variables to be demonstrated clearly. High standard unexpected earnings (*SUE_H*) and low standard unexpected earnings (*SUE_L*) variables are the two dummy variables employed. Based on the results in Chapter 7, low discretionary accruals are negatively and significantly related to contemporaneous returns. According to the first hypothesis, we expect winners firms to use accruals to provide positive earnings surprises. The result of the main regression in Table 7.5 confirms that surprises in earnings have a positive relation with stock returns, therefore we confirm the result of Chan et al (1996) that earnings surprises and returns are positively related.

The finding demonstrates if the firms make positive earnings surprises then it drives the returns to the upside. The finding shows a positive relation between discretionary accruals and earnings surprises. It means positive discretionary accruals make positive earnings surprises as measured by *SUE* in this thesis. To investigate the behaviour of loser and winner firms, the winners and losers portfolio are presented under interim data for each interim reporting period (two times a year) from 2004 to 2009. With regard to the return characteristics for each firm, the stock returns are classified into quintiles as documented in earlier research such as Jegadeesh, Narasimhan (1993), Sloan (1996), Chordia and Shivakumar (2006), and then the analysis of regressions are run for each quintile.

We find the earnings momentum for some interim and final periods are different and significant (see 2006/1, 2007/1, 2007/2 and 2009/1). Also, the finding provides

evidence that the returns based on discretionary accruals and earnings surprise have the same pattern. We conclude that winner firms use positive discretionary accruals to drive earnings surprises. The second hypothesis also yields interest results. The losers can use discretionary accruals to make positive or negative earnings surprises that leads them to stay as losers. This thesis finds that between winner and losers, price and earnings momentum differences are significant. Thus, winners have more opportunity to manage earnings by discretionary accruals than losers in some interim periods. Further research also looks at the relation between earnings management and stock returns for winners and losers by using components of discretionary accruals.

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APPENDIX

Appendix A

A detailed examination by Liu and Strong (2008, pp. 2246-7) of explanations of the 'rebalanced' method of portfolio allocation in key finance research papers (Source: W. Liu and N. Strong, 'Biases in decomposing holding-period portfolio returns', *Review of Financial Studies*, 2008, pp.2246-7)

Key: Journal of Finance JF, Journal of Financial Economics JFE, Review of Financial Studies RFS

Fama and French (JF, 1996)	''At the end of June of each year *t* (1963–1993), the NYSE stocks on COMPUSTAT are allocated to ten portfolios . . . Equal-weight returns on the portfolios are calculated from July to the following June'' (Table 2, p. 61). ''. . . the high *E/P* return (HE/P) is the average of the top three *E/P* decile returns..'' (p. 72).
Carhart (JF, 1997)	''The portfolios are equally weighted monthly so the weights are readjusted whenever a fund disappears'' (Table 3, p. 64).
La Porta, Lakonishok, Shleifer and Vishny (JF, 1997)	''Annual portfolio returns are obtained by equally weighting the returns on all stocks that belong to the portfolio . . . Portfolios are rebalanced to equal weights at the end of each year'' (pp. 861–862).
Daniel, Grinblatt, Titman and Wermers (JF, 1997)	''All quintile portfolios were rebalanced monthly'' (p. 1053).
Wermers (JF, 1999)	''Equal-weighted, size-adjusted, quarterly abnormal returns are calculated for each of these ten portfolios during . . . the following four quarters. . . . For example, the return shown for portfolio B1 in the first quarter (quarter +1) represents the hypothetical size-adjusted quarterly return that would accrue to investing, on April 1, 1975, in an equal-weighted portfolio of stocks the funds most strongly buy as a herd during the first quarter of 1975, holding this portfolio until June 30, 1975, and then rebalancing to hold an equal-weighted portfolio of stocks'' (p. 607).
Zheng (JF, 1999)	''I construct all trading portfolios at the beginning of each quarter . . . I hold these portfolios for three months, . . . For example, in order to construct the returns for portfolio 5 for July through September 1970, I first select funds with positive new money in the quarter that ends in June 1970. The July through September monthly returns of these selected funds are then weighted by their corresponding new money measure. The three weighted average numbers are the monthly returns earned by portfolio 5 for the three months desired'' (p. 906).
Moskowitz and Grinblatt (JF, 1999)	''Ranking the 20 industries based on their *L*-month lagged returns, we form portfolios of the highest and lowest past performing industries, hold them for *H* months, and rebalance monthly'' (p.

	1269).
Nofsinger and Sias (JF, 1999)	‘‘Monthly abnormal returns are calculated as the difference between the raw return for firm *i* in month *t* and the cross-sectional average return for firms in the same capitalization decile in month *t*. Capitalization deciles (breakpoints based on firms included in our sample) are formed annually at the beginning of each October’’ (fn. 10, p. 2271).
Shumway and Warther (JF, 1999)	‘‘Returns are calculated as equal-weighted averages of monthly returns for all the stocks in the portfolio’’ (Table 4, p. 2371).
Wermers (JF, 2000)	‘‘Every fund existing during a given calendar quarter (and having a complete data record) is included in the computation of that quarter’s average net returns (TNA weights are updated at the beginning of each quarter). These quarterly . . . returns are compounded to give the quarterly rebalanced annual returns’’ (Table 1, p. 1662).
Lee and Swaminathan (JF, 2000)	‘‘The portfolios are rebalanced each month’’ (Table 3, p. 2032).
Lamont and Polk (JF, 2001)	‘‘If a firm exits from the CRSP database, we drop it from the portfolio. This requires rebalancing portfolios during their 12-month holding period.” (fn. 2, p. 1701).
Lakonishok and Lee (RFS, 2001)	‘‘We calculate the portfolio returns by equally weighting the returns of individual stocks. We rebalance the portfolios annually so that each stock starts with the same weight at the beginning of the period’’ (p. 97).
Cohen, Gompers, and Vuolteenaho (JFE, 2002)	‘‘On June 30 of year t , . . . we set the portfolio weight for each stock equal to the year $t - 1$ cash-flow news . . . We compute monthly returns for this cash-flow-news portfolio from July 1 to June 30 of the next year ($t + 1$) and rebalance the weights every month’’ (p. 433).
Chan, Chen and Lakonishok (RFS, 2002)	‘‘For each of the resulting nine portfolios, equally weighted returns are calculated over the subsequent 12 months, and the process is repeated’’ (p. 1425).
Conrad, Cooper, and Kaul (JF, 2003)	‘‘We compute the average cross-sectional differences in returns based on the predictive variables and methods that are commonly used in the literature . . . and the monthly returns of the portfolios are calculated from July to June of the following year’’ (p. 1972).

Chan (JFE, 2003)	‘‘I form monthly equal-weighted portfolios of the winner and loser stocks . . . As an example, suppose we want to look at how good news affects returns over four months. At the end of each calendar month, we calculate the abnormal return for all stocks . . . We then average the abnormal returns for the calendar month across stocks to get the abnormal return on a portfolio’’ (pp. 228–229).
Ahn, Conrad and Dittmar (RFS, 2003)	‘‘We follow the method outlined in Jegadeesh and Titman (1993) for the construction of the momentum strategy payoffs’’ (p. 467).
Korajczyk and Sadka (JF, 2004)	‘‘The portfolio is rebalanced on a monthly basis’’ (Table 4, p. 1057).
Sapp and Tiwana (JF, 2004)	‘‘We compute monthly returns for the two sets of new-money portfolios using two portfolio-weighting schemes. First, we compute cash-flow weighted returns for the portfolio using the cash flows realized during the previous quarter by the funds within the portfolio. Additionally, we compute equally weighted returns for the new-money portfolios’’ (p. 2610).
Hogan, Jarrow, Teo, and Warachka (JFE, 2004)	‘‘. . . we long the top return decile, short the bottom return decile, and hold this portfolio for six months. The portfolio is rebalanced monthly to account for stocks that drop out of the database’’ (p. 543).
Teo and Woo (JFE, 2004)	‘‘We hold the portfolios for one year, then reform them . . . Stocks that disappear during the course of the year are included in the equally weighted average until they disappear, then the portfolio weights are readjusted appropriately. That is, the portfolio weights are rebalanced to equal at the end of every month’’ (p. 374).
Cohen, Coval and Pastor (JF, 2005)	‘‘All estimators are constructed using the past 12 months’ performance record of each fund. Fund returns are then averaged within each of the 25 portfolios over months 1, 2, and 3 following portfolio formation. The three-month return series are linked across quarters to form a monthly series of returns on each portfolio, and the alphas of the resulting 25 return series are reported’’ (Table VIII, p. 1087).
Gebhardt, Hvidkjaer, and Swaminathan (JFE, 2005)	‘‘In computing future portfolio returns, we include every firm that has . . . return data available for that month. Similar to Jegadeesh and Titman (1993), holding period portfolio returns are calculated as the equal-weighted average’’ (p. 660).
Nagel (JFE, 2005)	‘‘For all variables, portfolio boundaries are defined by quintile breakpoints . . . Returns in each portfolio are equally weighted and they are reported in percent per month’’ (p. 289).
Hanna and Ready (JFE, 2005)	‘‘We examine simple portfolio strategies, similar to those reported in both Fama and French (1992) and Haugen and Baker (1996), that hold only the stocks in a particular decile. We also consider strategies that are similar to those reported by Jegadeesh and

	Titman (1993)'' (p. 483). ''The results in Fama and French (1992), Jegadeesh and Titman (1993), and Haugen and Baker (1996) reflect simple averages of the monthly returns of the stocks in each portfolio. This calculation implies a portfolio strategy that maintains equal weights on all of the component stocks, which in turn implies monthly rebalancing. We report results for both equally weighted and value-weighted portfolios'' (p. 501).
Bollen and Busse (RFS, 2005)	''We sort funds each quarter . . . and form deciles of funds We then examine the performance of the deciles the following period'' (p. 576). ''Table 2 shows the results in the post-ranking quarter. Note that we calculate the average both across funds and across time'' (p. 577).

Appendix B

Results of regression analyses of returns on earnings (Loftus and Sin, 1997)

	1-year interval		2-year interval		3-year interval		4-year interval	
Variables	***Coeff.***	***t-state***	***Coeff.***	***t-state***	***Coeff.***	***t-state***	***Coeff.***	***t-state***
α_0	0.263	3.500***	0.553	3.250***	0.343***	2.800***	0.165	1.300
α1	1.160	3.880**	1.370	4.040**	1.212	6.960**	1.233	9.500**
R-squared	*0.1404*		*01512*		*03556*		*0.5094*	

t statistics are in parentheses.

P_i, is price per share of firm *i* at time *t.*

R_{iT} is returns per share of firm *i* for period 0 to *T.*

E_{iT}, is earnings per share divided by beginning of period price.

For brevity, results for the first partition only are reported for the one- and two-year intervals

$R_{it}=\alpha_0+\alpha_1 x = \frac{E_{iT}}{P_{iT}} + \varepsilon_{it}$

***, ** and * indicate significance at the 1%, 5% and 10% levels respectively.

Appendix C

Regression analysis of association between returns and other independent variables by Industry

	Industrial		**Utility**		**Transportation**	
	Eq (6.3)	*Eq (6.3A)*	*Eq (6.3)*	*Eq (6.3A)*	*Eq (6.3)*	*Eq (6.3A)*
Intercept	-0.385	-0.644	-0.276	-0.713	-0.233	-1.100
	<0.001	*<0.001*	*0.135*	*<0.001*	*0.646*	*0.062*
intercep_S1		0.722		0.731		0.872
		<0.001		*0.015*		*0.401*
LSR	0.032	0.117	-0.129	0.019	0.042	-0.073
	0.026	*<0.001*	*0.065*	*0.737*	*0.38*	*0.505*
S1 LSR		1.009		1.002		1.020
		<0.001		*<0.001*		*<0.001*
SIZE	0.023	0.034	0.017	0.037	0.015	0.061
	<0.001	*<0.001*	*0.073*	*<0.001*	*0.6*	*0.037*
S1 SIZE		-0.038		-0.038		-0.050
		<0.001		*0.012*		*0.329*
BM	-0.032	-0.030	-0.026	-0.014	-0.040	-0.062
	<0.001	*<0.001*	*0.466*	*0.705*	*0.457*	*0.255*
S1BM		0.043		0.016		0.076
		<0.001		*0.762*		*0.538*
SG	-0.099	0.010	0.038	-0.051	-0.335	-0.252
	<0.001	*0.851*	*0.867*	*0.868*	*0.263*	*0.632*
S1SG		-0.025		0.044		0.186
		0.754		*0.921*		*0.832*
DACC	-0.141	-0.134	0.803	0.401	0.803	-0.428
	0.03	*0.024*	*0.017*	*0.215*	*0.222*	*0.517*
S1DACC		0.141		-0.399		0.492
		0.103		*0.374*		*0.632*
SUE	0.040	0.051	0.021	0.038	0.010	-0.046
	<0.001	*<0.001*	*0.435*	*0.146*	*0.801*	*0.348*
S1SUE		-0.051		-0.040		0.061
		<0.001		*0.334*		*0.475*
Adj R-squared	*0.036*	*0.514*	*0.034*	*0.479*	*-0.017*	*0.277*

Note; the number of observation for all equation is 5,616 firm-period observation.