

**Bond University**

## **MASTER'S THESIS**

### **Propensity of Australian Firms to Manage their Earnings Around Recognised Benchmarks**

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**Propensity of Australian firms to manage their earnings around  
recognised benchmarks**

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## **Abstract**

This study conducts multiple approaches to identify earnings management within the Australian market. Companies with small positive earnings and positive earnings changes, referred to as benchmark beaters are assumed to be managing their earnings. Versions of the Dechow and Dichev (2002) model, Jones accrual quality model (1991, 1995) and earnings persistence measures are applied to identify whether companies with small positive earnings and small positive earnings changes manage their earnings. Evidence is identified to suggest that benchmark beaters manage their earnings to report a small positive Basic EPS result and this is supported by earnings persistence tests. However, when testing benchmark beaters based on reporting a small positive NPAT result, discretionary accruals are not significantly different for benchmark beaters compared to other firms. No evidence is identified to suggest that firms who report a small positive earnings change are managing earnings to acquire this benchmark. Earnings distributions are tested using NPAT and Basic EPS with no discontinuity identified at zero for small positive earnings and small positive earnings changes.

## **Declaration**

This thesis is submitted to Bond University in fulfilment of the requirements of the degree of Master of Philosophy. This thesis represents my own original work towards this research degree and contains no material which has been previously submitted for a degree or diploma at the University or any other institution.

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# Chapter 1 Problem Identification

## Introduction

Earnings management is an important accounting issue for market participants and academics. Prior research has identified the importance of earnings information within the financial statements, illustrating the reliance investors, creditors and market participants place on earnings to make investment decisions (Dechow, Hutton, Kim and Sloan, 2012). Opportunistic manipulation of earnings by firms reduces the quality of financial reporting and causes earnings reports to become more reflective of the discretion of management, as opposed to the underlying financial performance of the firm (Levitt, 1998).

Earnings management literature has identified measures to capture the extent of management discretion in earnings reported by firms in order to assess accounting quality. One approach is to identify discretionary earnings, which are defined as the intentional manipulation of accruals to increase managers' utility and maximize firm value (Ibrahim, 2009). Discretionary earnings have been previously assessed by researchers using a distribution of earnings approach. This approach assumes earnings management occurs around frequently evaluated earnings benchmarks where firms have strong incentives to manage earnings. In addition, accrual based models have been developed to examine the accruals accounting process to assess the level of discretionary earnings reported.

This thesis employs a distribution of earnings test in conjunction with accrual based models to test whether Australian companies manage their earnings around recognised benchmarks. The analysis presented examines two earnings distribution benchmarks, which are the achievement of positive earnings and a positive change in earnings. Companies that fall within these



categories are referred to as benchmark beaters (Coulton, Taylor and Taylor, 2005). Prior research shows that these benchmarks are likely to attract earnings managers due to implicit and explicit incentives for firms to achieve them (Degeorge, Patel and Zeckhauser, 1999). Firms attaining positive earnings and positive earnings change benchmarks have been found to report lower costs of debt and higher equity evaluations, even after controlling for the absolute magnitude of earnings changes (Jiang, 2008; Bartov, Givoly and Hayn, 2002). In addition, earnings are closely monitored by investors, directors, customers and suppliers, creating strong incentives for managers to manipulate reported earnings around earnings benchmarks (Degeorge *et al.* 1999). Specifically, this thesis examines whether benchmark beating firms manage their earnings compared to other firms to meet positive earnings and positive earnings change benchmarks. The analysis conducted tests whether the benchmark beating firms have significantly lower earnings quality than other firms.

Several studies from the United States (U.S) have provided evidence of earnings management around benchmarks (Degeorge *et al.* 1999; Durtschi and Easton, 2009). Early research by Burgstahler and Dichev (1997) and Beatty and Petroni (2002) suggest earnings management by U.S firms identified by a discontinuity around zero. They find a larger than expected number of firms report small positive earnings and positive earnings changes, which suggests earnings management to achieve earnings benchmarks. Other studies within the U.S. also report a similar pattern of earnings distribution when deflating earnings by sales revenue and total assets (Durtschi and Easton, 2005; Dechow, Richardson and Tuna, 2003; Burgstahler *et al.* 1997). Degeorge *et al.* (1999) highlight earnings management by U.S. firms based on three frequently evaluated benchmarks: small positive earnings, sustaining recent performance, and meeting analysts' forecasts.

However, there has been some debate about the benchmark beating explanation. Later research questions the research design used by previous studies implementing distribution of earnings tests (Coulton *et al.* 2005; Durtschi *et al.* 2005). For example, Durtschi *et al.* (2005) provide evidence that the shape of the frequency distribution of earnings is impacted by the deflator used to scale earnings. They suggest that deflators such as price and market capitalisation accentuate the discontinuity at zero.

Australian studies have also identified a discontinuity of earnings around zero for firms reporting small net profits and small positive earnings increases (Holland and Ramsay, 2003; Coulton *et al.* 2005). These discontinuities have been reported as evidence of Australian firms managing earnings to meet or beat earnings benchmarks. Coulton *et al.* (2005) evaluated the extent of earnings management by Australian firms from the perspective of a joint hypothesis. Specifically, they assessed earnings management using an earnings distribution approach in conjunction with earnings quality measures. Their study highlighted the controversial nature of the distribution patterns around zero and, for this reason, implemented accrual based models in conjunction with distribution earnings tests to provide a more robust characterisation of earnings management. They recognised that their results did not definitively answer the question as to whether Australian firms manage earnings around benchmarks including small positive earnings and small earnings changes. Their study indicated that benchmark beaters on average reported higher unexpected accruals using three versions of the Jones model (Jones, 1995). However, higher unexpected accruals were also reported for small net loss firms. In addition, Coulton *et al.* (2005) established a discontinuity of earnings around zero when deflating by total assets, market value and sales revenue. However, they did not find a discontinuity at zero using earnings per share (EPS) due to a lack of sufficient data.

Contrasting evidence is provided by Coulton *et al.* (2005) in relation to the magnitude of earnings management by Australian firms. This mixed evidence could be due to the earnings management models used in their analysis, with versions of the modified Jones model unable to detect the extent or magnitude of the discretionary earnings management. As conclusive evidence was not provided by Coulton *et al.* (2005), it is reasonable to suggest that discretionary earnings management is taking place amongst benchmark beaters yet it is not being detected by the accrual based models employed in prior studies.

Currently, earnings management research in Australia is still searching for more conclusive evidence to capture the degree of earnings management by Australian firm's benchmark beating. Recently, Habib and Hossain (2008) tested for earnings management using analysts' forecasts as a benchmark and again earnings management was not established for Australian firms. To evaluate the extent of earnings management Habib *et al.* (2008) measured unexpected accruals using versions of the modified Jones model. They did not find a significant difference between the mean and median of unexpected accruals for firms that just meet or beat analyst forecasts, against the just miss firms.

The development of new accrual based models for determining earnings management provides further opportunity to test the relation between benchmark beaters and earnings management. To date, research has not been conducted to evaluate the extent of earnings management by Australian companies using versions of the Dechow and Dichev (2002) accruals quality model within the context of benchmark beating. Therefore, this study uses the Dechow *et al.* (2002) model to measure the degree of earnings management conducted by Australian firms. Accruals quality is captured by the Dechow *et al.* (2002) model through its measurement of changes in working capital and how these changes are reflected in operating cash flows. The Dechow *et al.*

(2002) model is used because this model is considered to be more likely to directly capture accruals quality (Jones, Krishnan and Melendrez, 2008; Francis, Lafond, Olsson and Schipper, 2005).

Prior research has used accrual quality measures to assess the magnitude of earnings management conducted by firms. Accrual quality measures including the Jones model and modified Jones model have been used extensively to measure earnings management (Jones, 1991; Dechow, Sloan and Sweeney, 1995). Similarly, the Dechow *et al.* (2002) approach to measurement of accruals quality has been implemented widely in a number of empirical studies. The Dechow *et al.* (2002) model was argued by Francis *et al.* (2005) to be the most direct measure of accruals quality. This study implements versions of the Dechow *et al.* (2002) model to measure the degree of earnings management conducted by benchmark beaters. Versions of the Jones model and modified Jones model are also included in this analysis to allow for comparison with results derived from versions of the Dechow *et al.* (2002) model.

The emphasis of this study is to identify discretionary accruals rather than accruals that occur systematically due to innate industry and firm characteristics. Dechow *et al.* (2002) argue that, even without intentional earnings management, accruals quality is systematically impacted by firm and industry characteristics. The Dechow *et al.* (2002) model measures accruals quality, without distinguishing between discrepancies in earnings and cash flows that are associated with innate firm and industry characteristics or discretionary earnings manipulation. To better characterise the degree of earnings management by Australian firms, accruals quality is decomposed into innate and discretionary components using the approach outlined by Francis *et al.* (2005). The innate component of accruals quality is related to economic fundamentals of the

firm, as opposed to the discretionary component which is a consequence of manipulation of earnings by management (Francis *et al.* 2005).

The results of the analysis presented in this thesis provide evidence that benchmark beaters manage their earnings to achieve a small positive Basic Earnings per Share (EPS) result. Additional analysis using earnings persistence tests supported the finding that benchmark beaters manage their earnings to report a small positive Basic EPS. No evidence was found to suggest that benchmark beaters manage their earnings to report a small positive Net Profit after Tax (NPAT). Nor was evidence found to show benchmark beaters are managing their earnings to report a small positive earnings change.

### **Motivation**

The results of earnings management studies have received wide interest, with reviews completed by Schipper (1989), Healy and Wahlen (1999), Dechow and Skinner (2000) and Dechow, Ge and Schrand, (2010). Analysts, investors and executives consider earnings to be the most important information provided in the financial report of publicly listed firms. Incremental information on the management of earnings information is important to financial statement users because of the importance of earnings to inform investment decisions (Degeorge *et al.* 1999).

Prior studies assume that benchmark beaters are managing earnings opportunistically and measure a consequence based on this assumption (Dechow *et al.* 2010). Conclusive evidence has not been established within an Australian context to confirm that benchmark beaters manage earnings (Coulton *et al.* 2005; Habib *et al.* 2008). This research is motivated by the need for more evidence to verify that benchmark beaters do manage their earnings to achieve positive earnings and earnings change benchmarks. If discretionary earnings can be more

comprehensively identified within the Australian literature, this will allow studies to more accurately define the motivation for, and consequences of, earnings management.

Earnings management research identifies many payoffs for firm managers who match or surpass benchmarks including positive earnings and positive earnings changes. Barth, Elliott and Finn (1999) establish that firms with patterns of increasing earnings have higher price to earnings ratios after controlling for growth and risk. In addition, firms who deviated from positive earnings patterns experienced significant negative abnormal stock returns for that particular year (De Angelo, De Angelo and Skinner, 1996). Frequently, manager's compensation benefits are implicitly and explicitly dependant on the earnings of the firm (Healy, 1985). With such strong consequences for not meeting important benchmarks and the attachment of compensation benefits to earnings, anecdotally it seems very likely that earnings management occurs around significant benchmarks (Holland *et al.* 2003). However, Australian literature has yet to provide consistent evidence of the relation between benchmark beaters and earnings management.

A major objective of financial reporting standards is to provide financial statement users with high quality financial reporting. High quality reporting allows financial statement users to efficiently assess the economic fundamentals of a firm and provides efficient resource allocation within the market (Levitt, 1998). This study is motivated by the ability to more easily identify earnings management and to ensure that firms are reporting financial information that is reflective of the underlying performance of the firm. Ideally, financial reporting allows the best performing companies to clearly differentiate themselves from poor quality firms in the market (Healy *et al.* 1999). While recognising the difficulty of detecting discretionary accruals reported by firms, multiple studies have used measures of earnings management to assess accounting quality (Thomas and Zhang, 2000; Othman and Zeghal, 2006; Chang and Sun, 2009).

Financial reports are intended to provide credible and private information regarding the performance of the firm. This requires an element of reporting flexibility by management to most efficiently convey this information (Healy *et al.* 1999). Conversely, it is this reporting flexibility which provides managers with the ability to manage earnings opportunistically. This trade off in financial reporting efficiency requires standard setters to make a judgement on the level of flexibility afforded to management in financial reporting. Incremental information on the extent and frequency of earnings management is likely to help standard setters resolve this general question (Healy *et al.* 1999). In addition, further information regarding the extent of earnings management around key earnings benchmarks could provide greater scrutiny and evaluation of benchmark beaters, curbing the opportunity for firms to manage earnings. Identifying models that enhance researchers' ability to detect discretionary accruals and earnings management is essential to the development and assessment of reporting standards. This thesis provides incremental information to regulators, researchers and market participants regarding the extent of earnings management conducted by Australian firms.

## **Contribution**

Evaluation of the distribution of earnings around benchmarks including positive earnings and earnings changes has yielded differing results within the earnings management literature. Coulton *et al.* (2005) advise caution when observing a discontinuity of earnings around zero, remarking that these discontinuities may not reflect evidence of earnings management. Alternatively, Holland *et al.* (2003) report earnings management by Australian firms based on a discontinuity of earnings established by Australian firms reporting positive profits and sustaining previous year's profit performance. Importantly, EPS and NPAT have been discussed as earnings metrics which can be used to establish earnings management (Durtschi *et al.* 2009). This study provides an updated view of earnings distributions for 2007 based on positive

earnings and earnings changes. While this thesis recognises that discontinuities of earnings around benchmarks are not conclusive evidence of earnings management, it provides new data that is relevant to assessing the issue.

This study extends prior research of earnings management by evaluating versions of the Dechow *et al.* (2002) accrual quality measures on Australian firms. The ability of the Dechow *et al.* (2002) model to detect earnings management was demonstrated recently by Jones *et al.* (2008). This study compared the ability of ten accruals quality models to detect extreme cases of earnings management in circumstances of fraudulent earnings overstatement and non-fraudulent restatements of earnings. Jones *et al.* (2008) established that of the models tested only the Dechow *et al.* (2002) model and the McNichols (2002) version of the Dechow *et al.* (2002) model detected the earnings manipulation. Based on these findings it seems likely that applying versions of the Dechow *et al.* (2002) model to Australian data can provide further insights in to earnings management.

Data requirements for the Dechow *et al.* (2002) model include operating cash flows for the prior, current and subsequent periods to operationalize the Dechow *et al.* (2002) model. Australian researchers are in a unique position to evaluate the Dechow *et al.* model (2002) as the operating cash flows can be obtained directly from cash flow statements through the direct cash flow method. The direct cash flow reporting method was introduced to Australia in 1992 and was mandated by Australian accounting standard *AASB 127 Statement of Cash Flows* until early 2009.

In contrast, other jurisdictions such as the U.S. allow companies the option of reporting the direct or indirect cash flow method. If U.S companies report the indirect cash flow method



researchers are required to estimate the operating cash flows through calculations from the balance sheet to the income statement. Numerous studies have revealed that a variety of issues can affect the accuracy of estimating operating cash flow components from the indirect disclosure method. This is an important point because Australian researchers can rely more confidently on the integrity of their data without the concern of estimating operating cash flows.

Previous research has demonstrated that calculations from the balance sheet to the income statement can often yield figures that do not reconcile with the relevant operating cash flow account (Krishnan and Largay, 2000; Bahnson, Miller and Budge, 1996). Importantly, Hribar and Collins (2001) found measurement errors in accrual estimates calculated by studies using the balance sheet approach. These studies highlight the integrity and validity of data that is available to Australian researchers. Australian studies within the earnings management literature have not previously evaluated earnings management based on direct cash flows reported by Australian firms. This study is evaluating earnings management during 2007 and, therefore, takes advantage of the direct cash flows reported by Australian firms.

This chapter has described the research addressed in this thesis and summarised the contribution to existing literature. In chapter two, relevant literature is reviewed to identify theory and to develop hypotheses. Chapter three describes the research method to test the hypotheses developed in the previous chapter. Chapter Four presents analysis and results. The findings of the research are summarised and the limitations and implications of the study are discussed in chapter five.

## **Chapter 2 Literature Review and Hypothesis Development**

### **Literature Review**

Three key areas of earnings management literature are reviewed in this chapter. Firstly, prior studies related to the distribution of earnings around frequently evaluated benchmarks are reviewed. Secondly, the development of accrual based earnings management models are reviewed within the earnings management literature. Thirdly, studies that have addressed the ability of accrual based models to detect earnings management are discussed. The review of literature in these three areas then leads to the development of the hypotheses section.

### **Distribution of Earnings**

This section reviews the literature related to distributions of earnings. Initially the review focuses on international studies, and this is followed by a review of earnings distribution studies in the Australian market. Earnings distribution studies evaluate the frequency of firms reporting earnings around zero to assess whether a discontinuity exists. A discontinuity is identified when earnings results do not follow a relatively normal distribution around zero. Frequently, the distribution of earnings and earnings changes are evaluated for a discontinuity to establish whether firms are managing their earnings.

Using cross-sectional distributions of U.S earnings data, Hayn (1995) and Burgstahler *et al.* (1997) observe a discontinuity of earnings around zero. The earnings measures used included net income deflated by opening period market capitalisation, and change in net income deflated by opening period market capitalisation. Their findings demonstrate a concentration of firms reporting small positive earnings and earnings increases, compared to a fewer than expected number of firms reporting small losses and small earnings decreases. Based on an assumption of

a normal distribution, discontinuities around zero are suggested to be evidence of firms managing their earnings (Burgstahler *et al.* 1997).

Degeorge *et al.* (1999) evaluated the earnings management of firms in the context of three thresholds that motivate earnings management. The thresholds are: firms reporting positive profits, for example one penny per share; firms reporting profits above a prior comparable period (change in EPS); and, firms exceeding analysts' projections. Degeorge *et al.* (1999) analyse the density function for each threshold over the 1974-96 period. Importantly, they do not normalize their EPS figure because deflation of EPS can cause a spurious build up in the density at zero. They establish that a discontinuity exists around zero for each of the three thresholds. Furthermore, a threshold hierarchy is established based on the relative importance of achieving the threshold for each firm. Reporting a positive EPS is identified as the most important threshold, followed by positive earnings changes and, lastly, reporting profits exceeding analyst's forecasts.

Later research by Dechow *et al.* (2003) suggests caution when interpreting the ratio of small profit firms to small loss firms as evidence of earnings management. They investigate whether the discontinuity, or 'kink' as they refer to it, in earnings distribution identified by Hayn (1995) and Burgstahler *et al.* (1997) is due to an increase in discretionary accruals. Dechow *et al.* (1995) provide alternative reasons for the discontinuity and they suggest some factors which may impact the magnitude of the discontinuity. Their tests establish that selection bias and scaling issues are likely factors that play a role in the size of the earnings kink observed around zero. They also suggest that investors apply different valuation methods to loss firms as opposed to profit firms and this is likely to accentuate the kink in earnings.

Additional evidence is provided by Durtschi *et al.* (2009) about factors which are likely to accentuate the discontinuity at zero. Their study is motivated by the observation that the distributions of net income, basic EPS and diluted EPS do not show a discontinuity at zero. While a discontinuity at zero is observed for earnings deflated by beginning-of-year market capitalisation, beginning-of-year total assets and sales revenue. Durtschi *et al.* (2009) test the influence deflators have on a distribution of earnings test. They show that deflating net income (numerator) by the beginning of year market capitalisation (denominator) distorts the distribution measure in predictable ways based on the magnitude and sign of net income. For example, beginning of year market price captures the future stream of expected earnings and this relationship will impact on the distribution of earnings reported by net income deflated by beginning of year market capitalisation (Durtschi *et al.* 2009). Their salient point is that no deflator should be used if it distorts the underlying distribution at zero.

Sample selection criteria is an additional factor highlighted by Durtschi *et al.* (2009), which can have the potential to contribute to a pervasive or biased discontinuity at zero. Specifically, they identify the results of analysis by Jacob and Jorgensen (2007) as erroneously concluding a discontinuity at zero because of severe sample selection bias. They state that sample selection bias occurs, *'if a sample selection criterion leads to the deletion of more observations of small losses than observations of small profits, the shape of the earnings distribution in the vicinity of zero cannot be used as evidence of earnings management'* (Durtschi *et al.* 2009; pg 1279).

An alternative interpretation for the discontinuity in earnings is provided by Beaver, McNichols and Nelson (2007). They demonstrate how the asymmetric effects of income tax and special items for profit and loss firms contribute to the discontinuity of earnings at zero (Beaver *et al.*

2007). Income taxes induce profit observations towards zero and negative special items have a tendency to pull loss observations away from zero, creating the discontinuity observed at zero.

While a number of studies have provided explanations for the discontinuity in the earnings distribution, researchers have not excluded the proposition that earnings management is a contributing factor. Durtschi *et al.* (2009), reason that distributions of net income and earnings per share are earnings metrics which can be used to show evidence of earnings management. The findings of Durtschi *et al.* (2009) demonstrate that distribution of earnings metrics can be implemented to establish credible evidence of earnings management. Furthermore, there are advantages to using earnings distributions to detect earnings management because they do not rely on proxy models to decompose earnings in to discretionary and non-discretionary components (Plummer and Mest, 2000).

Kerstein and Rei (2007) examine the change in cumulative earnings distribution from the beginning fiscal quarter to the end of the firm's fourth fiscal quarter. They test whether firms moved abnormally during the fourth quarter earnings distribution to report a small positive earnings result. Kerstein *et al.* (2007) show that a higher proportion of firms report small profits during the fourth fiscal quarter compared to firms reporting positive profits in the first fiscal quarter. They argue that this is an indication of earnings management and that firms are likely to manage their earnings upwards. Their findings are based on a control group which is identified as firms close to the zero profit line at the end of the third fiscal quarter. It is this control group which reports a higher than expected frequency of positive profits.

Other studies implementing the distributions of earnings approach have attempted to identify which income-statement items are used to manage earnings. Plummer *et al.* (2000) suggest

firms manipulate earnings upwards by managing sales upwards and by managing operating expenses downwards. Interestingly, Jacob *et al.* (2007) aggregate different quarterly earnings over annual periods and compare these annual periods to the fiscal year calculated for each firm. They construct a benchmark for expected frequency in partitions of histograms of fiscal year earnings, based on the distribution of annual earnings in the other three annual periods. Using a distribution of earnings approach, they maintain that firms manage earnings to avoid earnings decreases and losses, reasoning that their results confirm and generally validate the discontinuities of earnings reported by Burgstahler *et al.* (1997).

Another earnings benchmark tested by Bennett and Bradbury (2007) was the dividend cover threshold. The use of this earnings threshold was based on the view that firms are motivated to manage earnings to avoid a decrease in the level of dividend paid for the prior year. Using a distribution of earnings technique, asymmetry was found in the distribution of earnings around the dividend cover threshold. Bennett *et al.* (2007) suggest that the dividend cover threshold is important for international research and studies examining earnings benchmarks. They also indicate that the dividend cover threshold is more likely to be relevant in jurisdictions where the dividend payout is relatively high and where the legal system requires dividends to be paid out of profits.

Bennett and Bradbury (2010) examine whether New Zealand firms are manipulating earnings around earnings benchmarks and, if so, how the earnings management occurs. They use time-series and cross-sectional series ratio analysis to establish whether New Zealand firms manage their net profit before tax. Similar to previous Australian studies they do not identify evidence of earnings management through accruals manipulation. However, their results do suggest that firms just above the dividend cover threshold engage in real economic actions as opposed to

accounting discretion to achieve earnings benchmarks (Bennett *et al.* 2010; Bruns and Merchant, 1990).

### **Distributions of Earnings – Australian Studies**

Prior Australian studies have also demonstrated a discontinuity of earnings around zero in the context of small positive earnings and small positive earnings changes. Holland *et al.* (2003) implement a research design using deflators for earnings including beginning of year book value of total assets and beginning of year market value of common equity. They find evidence establishing a discontinuity of earnings at zero for positive earnings and positive earnings changes. They find these results are strongest for large firms. Results show that a discontinuity at zero does not exist for small companies when testing positive earnings and small positive earnings changes.

Australian firms have also been evaluated to assess the level of earnings management within the context of meeting or beating analysts' forecasts (Habib *et al.* 2008). Evidence for Australian firms has failed to establish a significant difference between the mean and median for unexpected accruals for just meet firms or beat firms, as opposed to just miss firms (Habib *et al.* 2008). Habib *et al.* (2008) used the modified Jones model as the basis for assessing unexpected accruals, with results showing an absence of discernible earnings management. No significant difference was found between the earnings quality of benchmark beating firms and other firms. Similarly, Coulton *et al.* (2005) were unable to identify earnings management by Australian firms based on positive earnings and positive earnings change benchmarks. Their study tests a joint hypothesis where they examined whether a discontinuity in earnings was evidence of earnings management. In conjunction with the distribution of earnings tests they also assessed whether benchmark beaters have higher unexpected accruals compared to just miss firms and

other firms. The evidence was contradictory, with benchmark beaters reporting higher unexpected accruals compared to other firms, although just miss firms also reported a higher level of unexpected accruals. Unexpected accruals were tested using three models including the original modified Jones model (1995), the modified Jones model augmented with lagged total accruals, and the modified Jones model with the inclusion of lagged total accruals and growth for the following period. Earnings management was not detected for the three accrual based models.

Additionally, Coulton *et al.* (2005) evaluate earnings distributions by deflating operating income and changes in operating income by total assets, market value and sales revenue. Importantly, they included a distribution analysis of EPS, although as the authors recognise they did not have sufficient data for any meaningful analysis. Coulton *et al.* (2005) also evaluated raw earnings with no discontinuity identified at zero for positive earnings and positive earnings changes. The results demonstrated by Coulton *et al.* (2005) show that discontinuities at zero were found for positive earnings and positive earnings changes when earnings metrics were deflated or normalised. Alternatively, no discontinuities at zero were identified using raw earnings and EPS, earnings metrics without deflation.



## **Literature Review – Accrual Based Models**

Healy (1985) defined accounting earnings as having three components including cash flows from operations, non-discretionary accruals and discretionary accruals. Total accruals were calculated as the difference between reported earnings and operating cash flows. Total accruals for the immediate prior period were used as the proxy for expected accruals during the test period. This proxy for expected accruals was then evaluated against the total accruals for the event period, with any discrepancy assumed to be the discretionary component of total accruals.

DeAngelo (1986) analysed the accounting decisions made by sixty-four New York and American Stock Exchange firms. The consideration in this study was the vested interest managers had in manipulating their earnings downward to reduce the cost of buying back shares. Total accruals for the immediate prior period were used as a benchmark for identifying current accruals excluding any income manipulation to assess potential earnings management (DeAngelo, 1986). The average value of the abnormal accrual was then calculated based on discrepancies between total accruals for the prior period and total accruals for the current period. If this value was significantly negative in periods prior to a buyout, this was interpreted as systematic earnings understatement. This accrual quality model developed by DeAngelo (1986) assumed non-discretionary accruals remained constant from one period to the next. Early accrual models such as DeAngelo (1986) and Healy (1985) did not adequately account for the changes in conditions that can affect a firm's non-discretionary accrual components from period to period. These changes can adversely impact the quality of the discretionary accrual component measured.

McNichols and Wilson (1988) measured the level of earnings management by firms by assessment of a single accrual, the provision for doubtful debts. Their study was designed to

overcome the problems with variation in non-discretionary earnings by isolating a discretionary accrual proxy. Their approach differed from alternative measures in that they used generally accepted accounting principles (GAAP) to develop a discretionary accrual proxy. This discretionary accrual proxy was calculated from a balance sheet perspective, using the aged receivables method to estimate the expected level of provision for doubtful debts. Specifically, they assumed that firms adhere strictly to GAAP and that the expected level of provision for doubtful debts is projected as the summation of the opening balance for the allowance, current period write offs and managements expectation of future write-offs (McNichols *et al.* 1988).

A subsequent study by Jones (1991) provided a key model for determining expected accruals and unexpected or abnormal accruals. The Jones (1991) model assesses aggregate accruals by calculating the expected prediction error of total accruals from prior periods. Unlike previous accrual based models the Jones model calculates the expected total accruals benchmark using the longest times series available for each firm. The prediction error calculated by the Jones model (1991) during the test period is compared to the prediction error for the event period, with significant differences identified as unexpected accruals. Jones (1991) recognised that economic circumstances could impact a firm's non-discretionary accruals from period to period and accounted for this in her aggregate accruals model. Gross property, plant and equipment (PPE) and changes in revenue were included in the expected accrual regression to control for changes in non-discretionary components to capture firms changing economic circumstances (Jones, 1991). These additional variables further refined the model previously completed by DeAngelo (1986), who had previously assumed non-discretionary accruals were consistent from one period to the next.

The industry model was introduced in 1991 by Dechow and Sloan to examine the earnings management behaviour of firms with significant research and design expenditures. The industry model is similar to the Jones model, but it relaxes the assumption that non-discretionary accruals are constant over time. It models expected accruals based on an industry average where variations in non-discretionary accruals are assumed to be consistent across all firms in the industry (Dechow *et al.* 1991). The total expected accruals for each firm in an industry is calculated based on the median total accruals for that industry. This model provides for variation in non-discretionary accruals that are attributed to changes that are common across all firms in the same industry, but does not directly examine firm specific changes in non-discretionary accruals (Dechow *et al.* 1991).

The Jones model had implied that discretion over revenues during the estimation period and the period being assessed did not occur (Dechow *et al.* 1995). The modified Jones model (1995) incorporated the change in receivables and the change in revenues in the event period. The modified Jones model assumes that any changes in credit sales during the event period are the result of earnings management. While the modified Jones model improved power to capture manipulation of accruals, all the models tested demonstrated low power to recognise earnings management at economically plausible levels (1-5 per cent of total assets) (Dechow *et al.* 1995).

Further evidence on the time-series versions of the standard Jones and modified Jones models suggested both models estimated discretionary accruals with a considerable degree of imprecision (Dechow *et al.* 1995; Guay and Kothari and Watts, 1996; Kang and Shivaramakrishnan, 1995). Peasnell and Pope and Young (2000) established that the Jones model and modified Jones models provided more powerful indicators of earnings management using a cross sectional approach. Their study evaluated three accrual based models with results

indicating that the choice of accrual model should depend on the predicted form of earnings management, that is revenue based or expense based manipulation (Peasnell *et al.* 2000). Whilst the nature or intent behind earnings management is not always apparent, this finding by Peasnell *et al.* (2000) implies that one particular accrual based model is unlikely to adequately capture all forms of earnings management.

Dechow *et al.* (2002) designed another method for measuring the quality of working capital accruals and earnings. They developed a model to capture the extent to which working capital accruals map in to cash flows. The model measure's accrual estimation error as the '*residuals from firm-specific regressions of changes in working capital on last year, present, and one-year ahead cash flows from operation*' (Dechow *et al.* 2002; pg 36). The standard deviation of the regression residuals is used to measure accrual quality, with a higher standard deviation indicating a lower accruals quality. Unlike previous earnings management studies, they did not attempt to distinguish between discretionary and non-discretionary earnings. In addition, they assessed firm and industry characteristics that systematically reduced accruals quality and contributed to variation in non-discretionary accruals. Firm specific factors which demonstrated the strongest propensity to adversely impact accruals quality included length of operating cycle, standard deviation of sales, standard deviation of accruals, magnitude of accruals and amount of negative earnings (Dechow *et al.* 2002).

In her review of the Dechow *et al.* (2002) paper, McNichols (2002) evaluated the Jones (1991) model and the Dechow *et al.* (2002) model with the objective of creating a link between the two approaches to strengthen their ability to capture discretionary accruals. The set of estimation results for the Jones model was found to have some predictive power although this was substantially less than the Dechow *et al.* (2002) model. McNichols (2002) suggested an

extension to the Dechow *et al.* (2002) model based on evidence that a change in sales was a significantly correlated variable with cash flow from operations. McNichols (2002) suggested including a measure of property, plant and equipment and changes in sales in the Dechow *et al.* (2002) model, indicating that these variables improved the performance of the model.

Francis *et al.* (2005) studied the impact of accruals quality on the cost of debt and equity, analysing the pricing of accruals quality based on McNichols' version of the Dechow *et al.* model (2002). They implemented the Dechow *et al.* (2002) model using an industry cross section, highlighting the Dechow *et al.* (2002) model as the most direct measure for assessing accruals quality. They augment their initial analysis with the intent of distinguishing between unexpected accruals that are driven by economic fundamentals (innate accruals) and unexpected accruals influenced by management discretion (discretionary accruals). Two separate regressions are conducted by Francis *et al.* (2005) to identify a more reliable and cleaner measure for discretionary accruals.

Firstly, a regression is completed based on the McNichols version of the Dechow *et al.* (2002) model to measure the accruals quality of each firm. The residual from the initial regression is used as the dependent variable for the second regression. The second regression is then conducted against control variables which have been previously shown to impact the innate accruals quality of the firm. These additional control variables were originally recognised by Dechow *et al.* (2002) and they include firm size, standard deviation of cash flow from operations, standard deviation of sales revenue, length of operating cycle and frequency of negative earnings (Francis *et al.* 2005). The regression residual identified by the second regression conducted is used as a measure for the firm's discretionary accruals.

The Dechow *et al.* (2002) approach to measurement of accruals quality has been implemented widely in a number of empirical studies. These studies have used the measure to capture the association between capital markets and the quality of reported earnings (Francis *et al.*, 2005; Aboody, Hughes and Liu, 2005; Biddle and Hilary, 2006; Chen, Shevlin and Tong, 2007). Versions of the Dechow *et al.* (2002) model have also been applied in the context of accruals quality and corporate governance settings (Ashbaugh-Skaife, Collins, Kinney and Lafond, 2006; Doyle, Ge & McVay, 2007). In the majority of these studies, the variation of the original Dechow *et al.* (2002) model developed by McNichols (2002) is used to determine accruals quality.

Another recent study has attempted to increase the detection of earnings management by recognising that any accrual based earnings management must be reversed in another period (Dechow *et al.* 2012). Specifically, the variation in discretionary accruals doubles if the researcher can correctly identify the periods in which earnings management commences and subsequently reverses. This increase in variation of discretionary accruals makes it more likely to identify earnings management (Dechow *et al.* 2012). Tests for this model have demonstrated an increase in power and specification compared to current accrual based models. However, the major concern with the Dechow *et al.* (2012) approach is the requirement that the model requires '*priors concerning the period (s) in which the hypothesised earnings management is expected to reverse*' (Dechow *et al.* 2012; pg 276).

This section of the literature review has outlined the development of accrual based models. An important issue in relation to accurately measuring earnings management is the relative capacity of each accrual based model to detect earnings management, which is examined in the next section.

## **Detecting Earnings Management (Accrual Models)**

This section discusses earnings management papers which have reviewed accrual based models in terms of their ability to detect earnings management. There is mixed evidence within the literature regarding the competence of accrual based models to identify discretionary earnings. Prior research has established that certain accrual based models are better specified or demonstrate increased power depending on the form of earnings management conducted (Peasnell *et al.* 2000).

Alternative accrual-based models were assessed by Dechow *et al.* (1995) to measure their ability to capture discretionary earnings. The performance of each accrual model was tested to assess the frequency with which each accrual model generates type 1 and type 2 errors (Dechow *et al.* 1995). Type 1 errors occur when earnings management is not being conducted however the model identifies earnings management. Type 2 errors occur when earnings management is being conducted and the model does not capture the earnings management. The accrual models including Healy (1985), DeAngelo (1986), Jones model (1991), Industry model (1991) and the modified Jones model were all found to be well specified. However, the power of each accrual model to capture economically plausible levels of earnings management was found to be low. Significantly, a modified Jones model applied by Dechow *et al.* (1995) demonstrated the strongest power to capture discretionary accruals compared to models including Healy (1985), DeAngelo (1986), Jones model (1991) and the Industry model.

Prior to the Dechow *et al.* model (2002), other studies advocated the Jones and modified Jones models as having the potential to reliably estimate discretionary accruals (Guay *et al.* 1996). However, Guay *et al.* (1996) also refers to the imprecision of all the accrual based models tested within a market based context, including the Jones and modified Jones model. The tests

completed by Guay *et al.* (1996) illustrate the importance of evaluating discretionary accruals using a joint hypothesis. Specifically, they evaluated the predicted relations between earnings components (discretionary and non-discretionary accruals) and the predicted stock returns to identify evidence of discretionary accruals. Through analysis of earnings components using a joint hypothesis, researchers can provide a more robust result because the output of each accrual model is evaluated in the context of additional information.

Given that discretionary accruals cannot be directly observed, some researchers have applied simulation methods to measure the power and specification of accrual based models (Peasnell *et al.* 2000). Three models were tested by Peasnell *et al.* (2000) including the Jones, modified Jones and Margin model. The margin model is similar to the Jones and modified Jones model excluding the change in revenue term. The margin models primary difference is the separation of the revenue term in to two components, substituting cash receipts in the contemporary period for revenues in the current period. The three models tested by Peasnell *et al.* (2000) demonstrated low power for economically plausible levels of earnings management. Importantly, evidence was established showing the improved performance of the models through tests applying an industry specification. In addition, models performed better in certain circumstances with Peasnell *et al.* (2000) recommending certain models be applied based on the predicted form of earnings management. For example, the weakness of the Jones (1991) model is its inability to capture sales based manipulation (Peasnell *et al.* 2000).

Six different accrual prediction models were evaluated by Thomas *et al.* (2000) to determine the accuracy of models to predict total accruals and current accruals. The models tested included DeAngelo (1986), Jones (1995), Components model, modified Jones model (1995), Industry model (1991) and the Kang and Sivaramakrishnan model. Their paper focused on forecasting



accruals as opposed to detecting earnings management. They found the explanatory power of the models was high in-sample but this was not the case for out-of-sample testing, with R-square values dropping significantly. The R-square was calculated based on the ability of each model to forecast accruals accurately. Only two of the six models tested outperformed a naïve total accruals and current accruals test, with the Kang and Sivaramakrishnan (1995) model demonstrating slightly improved performance for total accruals, and the Jones (1991) model outperforming the naïve current accruals test. Overall, their conclusion was that the existing models used in the literature to date are not very accurate at an absolute level.

More recent studies have assessed the performance of these models to measure the extent to which managers opportunistically influence earnings. For example, Marquardt and Wiedman (2004) evaluated the use of specific accruals in three earnings management settings: equity offerings, management buyouts and firms avoiding earnings decreases. Their studies suggest that specific accrual accounts are not all used simultaneously to manage earnings and specific accrual accounts are used to manage earnings in particular circumstances. Using a performance matched approach based on industry, past performance and firm size, they establish that unexpected accruals are managed upwards prior to an equity offering and when firms are attempting to avoid negative earnings realisations. They also observed firms managing earnings downwards prior to management buyouts (Marquardt *et al.* 2004).

Additional studies were carried out by Jones *et al.* (2008) to assess the ability of prevalent discretionary models to capture extreme cases of earnings management. The McNichols versions of the Dechow *et al.* (2002) method is shown to have the highest association with fraud, followed by the Dechow *et al.* (2002) measure. These findings are significant with the McNichols version of the Dechow *et al.* (2002) model and the Dechow *et al.* (2002) model

demonstrating 42.17 per cent and 34.98 per cent association with fraud respectively (Jones *et al.* 2008). This is in contrast to the explanatory power of total accruals with a 2.58 per cent association with fraud. Other frequently used accrual models tested included the Jones model (1991), Beneish model, modified Jones model (1995) and versions of the Jones model using additional independent variables including book-to-market ratio, cash flows and return on assets. The Jones *et al.* (2008) study evaluated 10 discretionary accrual models with cross sectional data used due to sample size restrictions.

A comprehensive review of the earnings management literature is completed by Dechow *et al.* (2010). They refer to the Dechow *et al.* (2002) model demonstrating higher predictability than the Jones and modified Jones models. This comparison is made based on regressions completed from the original Dechow *et al.* (2002) paper, where the Dechow *et al.* (2002) model has an R-square of 47 per cent at the firm level, 34 per cent at the industry level and 29 per cent at a pooled level. They also note that the Dechow *et al.* (2002) model is unsigned and this can reduce the power of tests. Additionally, they discuss the limited nature of the Dechow *et al.* (2002) model to identify distortions created by long term accruals.

In a discussion paper reviewing the research completed by Dechow *et al.* (2010), Defond (2010) refers to the relative acceptance of the Dechow *et al.* (2002) model for measuring accruals quality. The variation applied to the Dechow *et al.* (2002) model by Francis *et al.* (2005) is identified as among the most current and widely accepted accrual based models in the existing research literature.

This section of the literature review has reviewed accrual based models in terms of their ability to detect earnings management. Versions of the Dechow *et al.* (2002) model have been

identified as measures which can provide incremental information in relation to the magnitude of earnings management conducted by benchmark beating Australian firms. The following section outlines the hypothesis which will be tested in this study.

### **Hypothesis Development**

This thesis adds to the existing studies that have tested whether benchmark beaters, exhibit earnings management consistent with prior Australian studies. Two benchmarks will be assessed, which are positive earnings and positive earnings changes.

Prior evidence of Australian firms managing their earnings to report positive earnings and positive earnings changes have been identified by Holland *et al.* (2003) and Coulton *et al.* (2005). However, the deflators used by Holland *et al.* (2003) including beginning of year book value of total assets and beginning of year market value of common equity have been identified as deflators which are likely to accentuate the discontinuity at zero (Durtschi *et al.* 2009). Distributions of earnings tests were also completed by Coulton *et al.* (2005) and similarly the deflators used in their study are likely to have accentuated the discontinuity at zero (Durtschi *et al.* 2009). Coulton *et al.* (2005) measured distributions of earnings using operating income deflated by total assets, market value and sales revenue. Recall that EPS and net income without deflation have been recognised by Durtschi *et al.* (2009) as earnings metrics which can provide incremental information using a distribution of earnings approach. Revised earnings measures including Basic EPS and NPAT without deflation will be used in distributions of earnings tests to evaluate whether Australian firms manage their earnings to acquire positive earnings and positive earnings change benchmarks.

In addition to measuring discretionary accruals using a distribution of earnings approach, Coulton *et al.* (2005) measured discretionary accruals of benchmark beaters using accrual based models. Specifically, Coulton *et al.* (2005) were unable to identify higher discretionary accruals for benchmark beaters (positive earnings and positive earnings changes) as opposed to just miss firms using three versions of the modified Jones model. Similarly, Habib *et al.* (2008) used three versions of the modified Jones model to assess whether benchmark beating firms manage their earnings to beat analysts' forecasts. Earnings management was not identified by Habib *et al.* (2008) based on the ASX listed companies evaluated. These Australian studies were not able to clearly identify earnings management around positive earnings and positive earnings change benchmarks.

Francis *et al.* (2005) identify the McNichols version of the Dechow *et al.* (2002) model as the most direct measure for capturing discretionary accruals. They augment this model with five factors which have been shown to impact accruals quality based on the fundamental factors of the firm. These five factors include firm size, standard deviation of cash flow from operations, standard deviation of sales revenue, length of operating cycle and frequency of negative earnings (Francis *et al.* 2005). This study identifies the Francis *et al.* (2005) version of the McNichols version of the Dechow *et al.* (2002) model as the most direct measure of discretionary accruals. The McNichols version of the Dechow *et al.* (2002) model and the original Dechow *et al.* (2002) model also demonstrate the strongest capability to recognise extreme cases of earnings management in a study where ten different accrual based models were tested (Jones *et al.* 2008).

Given the ability of the Dechow *et al.* model (2002) to recognise earnings management this study implements versions of the Dechow *et al.* (2002) model to capture the degree of

discretionary accruals reported by benchmark beaters. Versions of the Jones (1991) model and modified Jones (1995) model are also tested for comparison purposes.

The magnitude of earnings management conducted by benchmark beaters in the Australian market has not been clearly quantified. This thesis has identified distribution of earnings approaches and accrual based models which can provide incremental information in relation to the degree of earnings management conducted by benchmark beaters. Managers certainly have economic incentives to manage their earnings to acquire positive earnings and positive earnings change benchmarks. Failure to detect earnings management around earnings benchmarks could be related to the relative power of the earnings management tests used to measure earnings management. The hypothesis for this study is as follows:

**H1: Benchmark beater firms have lower discretionary accruals quality compared to non-benchmark beaters**

This chapter has reviewed the earnings management literature from three different perspectives including distributions of earnings, accrual based models and the ability of accrual based models to capture earnings management. The hypothesis was identified, and research techniques were identified which can provide incremental information regarding the association between benchmark beaters and earnings management. The following chapter outlines the research methods used to test the hypothesis developed in this chapter.

## **Chapter 3 Research Method**

### **Research Design**

Earnings management is likely to occur when managers have the strongest incentives and rewards for manipulating earnings. Prior research has identified two earnings performance benchmarks where managers have an incentive to manage earnings. These are positive earnings and positive earnings changes (Degeorge *et al.* 1999; Burgstahler *et al.* 1997). To test the hypothesis that benchmark beaters manage their earnings the Dechow *et al.* (2002) accrual quality model is applied to determine the extent of earnings management by Australian firms. The analyses are conducted using data available from direct operating cash flow reports of Australian companies.

### **Sample and Data**

The sample consists of companies listed on the Australian Securities Exchange in 2007. Data for the analyses were collated from the Aspect FinAnalysis database including financial information and Basic EPS data. Prior to 2009, companies were required to report the direct cash flow method within their Statement of Cash Flows. As the data from direct cash flow reporting is critical to the analysis, 2007 was selected as the most recent and appropriate year to test earnings management by Australian firms. Due to unusual volatile financial conditions with the onset of the global financial crisis, 2008 was not selected as the test year. Three years of data from 2006 to 2008 were required to estimate accruals quality for 2007 due to the requirement of lag and lead operating cash flow data. Of the 1853 listed companies in 2007, 528 companies were excluded due to missing data. This left a final sample of 1325 companies. Evaluation of the different accrual based models requires a rich data source because of the number of variables required. A trade-off exists between assessing simple models that maximise

a sample size and more detailed accrual based models which have greater data requirements (Jones *et al.* 2008). Sample size therefore varies slightly in the analyses due to the varying data requirements of each accrual based model used. Relevant sample sizes are shown in the various tables reporting results.

### **Benchmark Beating Analyses**

In testing our accrual based models, an appropriate interval width needs to be identified that effectively captures the positive earnings and changes in earnings group. An interval width is chosen that provides an accurate density estimate, balanced against the necessity for detail. An interval that is too large can conceal essential detail, whilst smaller intervals can be adversely impacted by idiosyncratic noise (Holland *et al.* 2003). For comparability, initial tests are conducted following interval widths used by Coulton *et al.* (2005) and Holland *et al.* (2003). An interval width of one per cent of Net Profit after Tax (NPAT) deflated by opening period total assets is implemented for small positive earnings (Holland *et al.* 2003). Moreover, an interval width of half a per cent is used to calculate positive earnings changes, where a change in NPAT is deflated by opening period total assets for the period of 2006 to 2007.

In addition to testing for earnings management within the context of small positive NPAT and small positive changes in NPAT, tests are repeated using accrual based models on firms reporting small positive Basic EPS and small changes in Basic EPS. Again, an interval width is chosen that will most likely include firms that have managed earnings. An interval width of one cent-per-share for small positive earnings is used; that is, greater than zero cents per share and less than or equal to one cent-per-share. An interval width of one cent-per-share has also been chosen for positive earnings changes with an interval created at greater than zero cents per share to less than or equal to one cent-per-share.

The reported Basic EPS data is calculated within Australia under accounting standard AASB133 EPS. The Australian standard is the equivalent of International Accounting Standard IAS33 Earnings per Share<sup>1</sup>. The standard requires Basic EPS to be calculated as follows.

$$\text{Basic EPS} = (\text{Earnings} - \text{Preference Dividends}) / \text{Weighted Average Number of Shares} \quad (1)$$

Preference dividends are excluded from the Basic EPS calculation due to Basic EPS being calculated from the perspective of the ordinary shareholder. It is significant that the Basic EPS measure uses weighted average ordinary shares in the denominator of the calculation. The weighted average number of ordinary shares for the period is the number of ordinary shares at the beginning of the period, adjusted by the number of ordinary shares bought back or issued during the period, multiplied by a time weighting factor. The time weighting factor is the number of days the shares are outstanding as a proportion of the total number of days in the period (AASB 133, paragraph 20). Furthermore, ordinary shares that are issued as mandatory convertible instruments are included in the Basic EPS calculation from the date the contract is entered in to (AASB 133, paragraph 23).

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<sup>1</sup> The IFRS are adopted in Australia. The standard is issued by the Australian Accounting Standards Board (AASB) as AASB133 Earnings Per Share.



## Accrual Quality Models

Versions of the Dechow *et al.* (2002) accruals quality model are the focus of this study. The models determine accruals quality by assessing how well accruals estimate actual cash flows. The approach involves the application of a regression of current period changes in working capital on past, present and future period operating cash flows. The regression residual measures the portion of accruals that do not estimate actual cash flows, providing a relatively direct measure of the quality of accruals. A larger regression residual identifies poorer quality accruals. The original Dechow *et al.* (2002) model is shown in equation (2) below.

$$\Delta WC_t = \beta_0 + \beta_1 CFO_{t-1} + \beta_2 CFO_t + \beta_3 CFO_{t+1} + \varepsilon_t \quad (2)$$

Where:

$\Delta WC_t$  = change in working capital accruals measured by the change in accounts receivable, inventory, accounts payable, taxes payable and other current assets.

$CFO_{t-1}$  = cash flow from operations in  $t-1$ .

$CFO_t$  = cash flow from operations in  $t$ .

$CFO_{t+1}$  = cash flow from operations in  $t+1$ .

The dependent variable,  $\Delta WC$  is the change in working capital accruals in period  $t$  measured by the change in accounts receivable, inventory, accounts payable, taxes payable and other current assets. The independent variables are prior-year, present-year, and one-year-ahead net cash flow from operations. The regression residual or error term provides the measure of accruals quality; it represents the portion of accruals that does not closely estimate actual cash flows. Dechow *et al.* (2002) calculate the standard deviation of the yearly regression residuals over a five year period to measure accruals quality. Alternatively, they also refer to the absolute value of the residual for that year as an appropriate measure for accruals quality. This study uses the absolute value of the residual for 2007 as a measure for accruals quality.

McNichols (2002) develops a variation of the Dechow *et al.* (2002) model that includes the change in sales and the size of property, plant and equipment for the current period. These variables were used in the Jones (1991) model and according to McNichols (2002), are important to forming expectations about current accruals above the contribution of operating cash flows. McNichols (2002) and Francis *et al.* (2005) show an improvement in model fit by augmenting the original Dechow *et al.* (2002) model with these variables. The model is displayed in Equation 3 below.

$$\Delta WC_t = \beta_0 + \beta_1 CFO_{t-1} + \beta_2 CFO_t + \beta_3 CFO_{t+1} + \beta_4 \Delta SALES_t + \beta_5 PPE_t + \varepsilon_t \quad (3)$$

Where:

$\Delta WC_t$  = change in working capital accruals measured by the change in accounts receivable, inventory, accounts payable, taxes payable and other current assets.

$CFO_{t-1}$  = cash flow from operations in t-1.

$CFO_t$  = cash flow from operations in t.

$CFO_{t+1}$  = cash flow from operations in t+1.

$\Delta SALES_t$  = change in sales from t-1 to t.

$PPE_t$  = property plant and equipment reported at t.

The McNichols (2002) version of the Dechow *et al.* (2002) model is applied to Australian firms listed on the securities exchange for 2007.

Regressions conducted using the Dechow *et al.* (2002) model and McNichols version of the Dechow *et al.* (2002) model are augmented to distinguish between accruals quality impacted by innate factors of the firm and accruals quality impacted by management discretion. Innate factors of the firm refer to the business environment and business model of the firm, which result in estimation error. For example, length of operating cycle is an innate factor which adversely impacts the accruals quality of a firm where a longer operating cycle reduces accruals quality. As opposed to accruals quality which is due to management discretion (Francis *et al.* 2005). Four summary indicators are regressed against the initial residual from equation 2 to

control for accruals quality which is influenced by the firm's fundamental business factors. The indicators are originally identified by Dechow *et al.* (2002) and used in the Francis *et al.* (2005) study. The indicators or innate factors include firm size, frequency of negative earnings, length of operating cycle and volatility of operating revenue.

Francis *et al.* (2005) also include the standard deviation of operating cash flow as a proxy for volatility of operating environment. This study only uses the standard deviation of operating revenue as our proxy to avoid multicollinearity problems. The analyses were performed using the standard deviation of operating cash flow and results were qualitatively similar. The model and proxies used for the four summary indicators are displayed in equation 4 below.

$$AQ = \beta_0 + \beta_1 SIZE + \beta_2 FREQLOSS + \beta_3 OPCYC + \beta_4 OPREV + \varepsilon_t \quad (4)$$

Where:

*AQ* = Accruals quality (regression residual error for 2007).

*SIZE* = Natural log of total assets for 2007

*FREQLOSS* = If the firm incurred a loss from 2005 to 2007

*OPCYC* = Natural log of average age of inventory plus the average age of receivables (in days) 2006 and 2007, (365 days)

*CFVOL* = Standard deviation of cash flow divided by total assets for 2006 to 2008.

*OPREV* = Standard deviation of operating revenue divided by total assets for 2006 to 2008.

The regression error term calculated from the second part regression estimates the firm's portion of accruals quality error that can be attributed to discretionary earnings management.

The predicted value is the innate accruals quality measure.

Discretionary accruals are calculated using the Jones model and modified Jones model to allow for comparison with the Dechow *et al.* (2002) model and prior studies. The Jones (1991) model assesses aggregate accruals by calculating the prediction error of total accruals from prior periods. Equation 5 calculates non-discretionary accruals using the original Jones (1991) model.

$$NDAC = B_0 + B_1(\Delta OPREV_t) + B_2 * PPE_t + \varepsilon_t \quad (5)$$

Where:

*NDAC = Non-discretionary Accruals quality (regression residual error for 2007)*

*$\Delta OPREV_t$  = Operating revenue in year  $t$  less operating revenue in year  $t-1$  scaled by total assets at  $t-1$*

*$PPE_t$  = Property plant and equipment reported at  $t$*

*Each variable is scaled by beginning of year total assets*

Non-discretionary accruals calculated by the Jones (1991) model (equation 5) are used to calculate discretionary accruals for the Jones (1991) model. This calculation is outlined below in Equation 6.

$$DA = TACC - NDAC \quad (6)$$

Where:

*DA = Discretionary accruals quality*

*TACC = Total Accruals*

*NDAC = Non-Discretionary Accruals*

*Total accruals = Net Profit after tax – Cash flow from operations*

Previously, the Jones model had implied that discretion over revenues during the estimation period and the period being assessed did not occur (Dechow *et al.* 1995). The modified Jones model (1995) incorporates the change in receivables with the change in revenues in the event period. Non-discretionary accruals are calculated below in equation 7 using the modified Jones model (1995).

$$NDAC = B_0 + B_1(\Delta OPREV_t - \Delta REC) + B_2 PPE_t + \varepsilon_t \quad (7)$$

Where:

*NDAC = Non-Discretionary Accruals quality (regression residual error for 2007)*

*$\Delta OPREV_t$  = Operating revenue in year  $t$  less operating revenue in year  $t-1$  scaled by total assets at  $t-1$*

*$\Delta REC$  = Net receivables in year  $t$  less net receivables in year  $t-1$  scales by total assets at  $t-1$*

*$PPE_t$  = Property plant and equipment reported at  $t$*

*Each variable is scaled by beginning of year total assets*

Discretionary accruals calculated by the modified Jones model (1995) are outlined below in equation 8.

$$DA = TACC - NDAC \quad (8)$$

Where:

*DA = Discretionary accruals quality*

*TACC = Total Accruals*

*NDAC = Non-Discretionary Accruals*

*Total accruals = Net Profit after tax – Cash flow from operations*

Table 1 provides description of each accruals quality measure used in this study.

**Table 1**  
**Description of Accruals Quality and Earnings Quality Measures**

<b>DDMCNINN</b>	Francis <i>et al.</i> version of Dechow and Dichev (2005). Accrual based model calculating the accruals quality of firms with control variables included for innate characteristics of firms. The measure is the predicted value from equation 4.
<b>DDMCNDISC</b>	Francis <i>et al.</i> version of Dechow and Dichev (2005). Accrual based model calculating the discretionary component of accruals quality. The measure is the error term from equation 4.
<b>MCNDD</b>	McNichols version of Dechow and Dichev (2002). Accrual based model calculating the accruals quality of firms. The measure is the error term from equation 3.
<b>JONESDISC</b>	Jones model (1991). Measure of discretionary accruals quality. See equation 5 and 6.
<b>MODJONESDISC</b>	Modified Jones model (1995). Measure of discretionary accruals quality. See equation 7 and 8.

## **Earnings Measures for Benchmark Beating Tests**

Earnings management is likely to be reflected in a larger than expected number of firms reporting small positive earnings and small positive earnings changes. These discontinuities have previously been explained by firms managing earnings based on frequently used benchmarks (Holland *et al.* 2003; Burgstahler *et al.* 1997). Other researchers have questioned the effect of deflators used in prior studies. Specifically, they question whether the discontinuities around zero are the result of earnings management or simply that the deflator used in the study is accentuating the observed discontinuity at zero (Durtschi *et al.* 2005; Durtschi *et al.* 2009). Due to these contrasting views within the literature, distribution of earnings is measured using NPAT without deflation and Basic EPS. These two earnings metrics (NPAT and Basic EPS) are identified as measures that will provide a more accurate analysis of the distribution of earnings (Durtschi *et al.* 2009).

EPS is an important measure within the context of evaluating distributions of earnings because it does not require deflation to evaluate the distribution around zero (Degeorge *et al.* 1999). Recently, EPS has been established as a valid measure that may be used as evidence of earnings management when evaluating distributions of earnings around zero (Durtschi *et al.* 2009). EPS is widely used as a measure of performance and it controls for the effects of differential pricing between profit and loss firms, which can occur when using price, total assets or market value as a deflator (Coulton *et al.* 2005).

NPAT is another earnings metric used in this study to establish evidence of earnings management through earnings distribution measures. NPAT is not deflated in this study as this can create differential pricing between profit and loss firms. Durtschi *et al.* (2009) establish NPAT as a credible earnings proxy to use for earnings distribution tests.

Aligning the EPS measure with previous earnings management studies, Basic EPS data is collated from the Aspect FinAnalysis database (Coulton *et al.* 2005). Frequently, prior studies have normalized EPS by deflators such as price per share and assets per share in an attempt to standardize the observations. Importantly, EPS is not a deflated variable, it is simply the income due to the owner of each share (Durtschi *et al.* 2005). For this study, the Basic EPS figure has not been standardized because of the spurious patterns that can occur due to the EPS figure being rounded to the nearest cent. This rounding of the EPS figure can create a nontrivial amount of EPS observations amounting to zero (Degeorge *et al.* 1999).

In testing the distribution of earnings, histograms are used to graphically represent the pooled cross-sectional data collected for Australian firms listed on the securities exchange for 2007. To assess whether a discontinuity at zero exists, an appropriate interval width must be chosen that effectively captures our benchmark beaters. An interval width is recommended that is positively related to the variability of the data and negatively related to the number of observations (Silverman, 1986; Scott, 1992). Freedman and Diaconis (1981) recommend an interval width that has previously been applied by Degeorge *et al.* (1999) in an earnings management setting, which is calculated as follows:

$$2(IQR)n^{-1/3} \tag{9}$$

*Where:*

*IQR is the interquartile range in sample*  
*n is the number of sample observations*

Given the sample an interval width of greater than zero cents per share to less than or equal to one cent per share is used. This interval width provides meaningful comparison with previous studies (Coulton *et al.* 2005; Durtschi *et al.* 2005). The focus is on the first interval above zero excluding all zero Basic EPS measures from the sample (Degeorge *et al.* 1999; Durtschi *et al.*

2005). Exclusion of the zero Basic EPS measures avoids the complexity of misclassifying zero EPS measures as either a profit or a loss. Thirty-two companies with zero EPS figures are excluded from the analysis.

To evaluate the statistical significance of the results, a test needs to be applied to establish whether there is a discontinuity in the distribution of earnings observations, proxied by Basic EPS and NPAT. If earnings management is occurring, an above average number of observations would be expected just above the zero threshold for small positive earnings and small positive earnings changes. Following Burgstahler *et al.* (1997), an assumption is made that the cross-sectional distribution of earnings and earnings changes are relatively smooth. Applying this assumption, the test statistic for an interval is calculated as the difference between the actual and expected number of observations for an interval, divided by the estimated standard deviation of the difference (the standardised differences are assumed to be distributed approximately normal) (Burgstahler *et al.* 1997; Holland *et al.* 2003). The estimated standard deviation is calculated as follows:

$$Np_i(1-p_i) + (1/4)N(p_{i-1}+p_{i+1})(1-p_{i-1}-p_{i+1}) \quad (10)$$

*Where:*

*N is the number of observations*

*p<sub>i</sub> is the probability an observation will fall into i, by p<sub>i</sub>*

To calculate the expected number of observations for a given interval, the average of the two immediately adjacent intervals is used.

The assumption of a linear curve can create some noise in the test statistic due to a normal curve being non-linear. The test statistic assumes a linear curve because it calculates the expected number of observations in an interval based on the average of the two immediately



adjacent intervals. However, this noise can be reduced by using smaller interval widths and limiting the number of intervals used to calculate the expected frequency of observations within an interval (Holland *et al.* 2003). Furthermore, using the two adjacent intervals as an estimate of the expected number of observations in a given interval can be potentially problematic. Given that the hypothesis is expecting companies are trying to avoid reporting losses or earnings decreases, firms are likely to shift from one interval to the next, in the majority of cases (Holland *et al.* 2003). To avoid these issues, alternative approaches can be implemented to calculate the number of expected observations within an interval. Two approaches used by Burgstahler *et al.* (1997) include calculating the test interval based on the average of the next-to-adjacent intervals and using the average of the four adjacent intervals to calculate the expected frequency of the test interval. These two additional approaches solve for the impact of firms shifting from one interval to the next although they are likely to compound issues in relation to the assumption of a linear curve.

For comparison reasons, the test statistic used by previous Australian researchers is used, which involves calculating the test statistic using the immediate adjacent intervals (Coulton *et al.* 2005; Holland *et al.* 2003).

This chapter has described the sample and methodology that will be implemented in this thesis. The distribution of earnings tests and accrual based models which will be used to test for earnings management by ASX listed firms were outlined in this chapter. The following chapter reports results of analysis outlined in this chapter.

## Chapter 4 Results

This section reports descriptive statistics, results for distribution of earnings tests and hypothesis testing using accrual based models. Additional analysis using earnings persistence tests is also conducted to evaluate the validity of the results reported by the accrual based models. Each earnings management test completed evaluates positive earnings and positive earnings change benchmarks.

### Descriptive Statistics – Benchmark Beaters, Just Miss Firms and Other Firms

**Table 2**  
**Descriptive statistics – Benchmark Beaters**

*Panel A: Benchmark Beaters (n = 81)*

Variable	Mean	Standard Deviation	Minimum	Median	Maximum
<i>Continuous Variables</i>					
Total assets (000's)	38 446	62 509	1 200	208 02	391 503
CFO2006	-0.08	0.45	-2.43	0.01	0.44
CFO2007	0.01	0.14	-0.69	0.01	0.44
CFO2008	-0.04	0.19	-1.13	-0.02	0.19
ΔSALES	0.12	0.23	-0.42	0.67	0.76
PPE	0.23	0.25	0.00	0.13	1.00
OPCYC	116.50	110.45	0.00	86.01	457.77
OPREV	0.30	0.45	0.00	0.15	2.37
<i>Categorical Variables (Yes=0) (No=1)</i>					
FREQLOSS	74.25%	25.75%			

*Panel B: Other Firms(n=1244)*

Variable	Mean	Standard Deviation	Minimum	Median	Maximum
Total assets (000's)	1003 604	5720 266	42	417 29	564 634 000
CFO2006	-0.11	0.40	-2.43	-0.01	0.48
CFO2007	-0.10	0.38	-2.29	-0.01	0.50
CFO2008	-0.13	0.59	-4.28	0.00	0.53
ΔSALES	0.09	0.33	-1.16	0.03	1.51
PPE	0.29	0.30	0.00	0.17	1.00
OPCYC	111.05	130.79	0.00	73.38	730.00
OPREV	0.20	0.35	0.00	0.08	2.37
<i>Categorical Variables (Yes=0) (No=1)</i>					
FREQLOSS	53.50%	46.50%			

*Panel C: Just Miss Firms (n=131)*

Variable	Mean	Standard Deviation	Minimum	Median	Maximum
Total assets (000's)	358.25	97.343	44	111.74	908.283
CFO2006	-0.37	0.58	-2.43	-0.17	0.48
CFO2007	-0.24	0.43	-2.29	-0.11	0.20
CFO2008	-0.26	0.63	-4.28	-0.06	0.53
$\Delta SALES$	0.07	0.33	-1.16	0.01	1.51
PPE	0.16	0.21	0.00	0.06	1.00
OPCYC	100.87	139.39	0.00	49.14	730.00
OPREV	0.21	0.45	0.00	0.05	2.37
Categorical Variables (Yes=0)		(No=1)			
FREQLOSS	100%	0%			

*Where:*

*Total Assets = (Opening Assets + Closing Assets)/2*

*CFO2006 = Cash flow from operations for 2006*

*CFO2007 = Cash flow from operations for 2007*

*CFO2008 = Cash flow from operations for 2008*

*$\Delta SALES_t$  = change in sales from t-1 to t.*

*$PPE_t$  = property plant and equipment reported at t*

*OPCYC = Natural log of average age of inventory plus the average age of receivables (in days) 2006 and 2007, (365 days)*

*OPREV = Standard deviation of operating revenue divided by total assets for 2006 to 2008.*

*FREQLOSS = If the firm incurred a loss from 2005 to 2007*

Table 2 provides descriptive statistics for the variables included in the accrual quality models.

Panel A, shows descriptive statistics for benchmark beaters with an average cash flow from operations for 2007 (CFO2007) at 0.01. This is expected given the benchmark beaters report small positive earnings. Change in sales ( $\Delta SALES$ ) is positive for the 2006 to 2007 period with a mean of 0.12 and the mean operating cycle (OPCYC) for 2007 is 116.50 days. Lastly, 74.25 per cent of benchmark beaters incurred a loss from 2005 to 2007 (FREQLOSS).

Results reported in Panel B show the descriptive statistics for other firms, with a mean for cash flows from operations for 2007 (CFO2007) at -0.10. The mean for cash flow from operations is also similar for the prior and subsequent years with a mean of -0.11 for CFO2006 and a mean of -0.13 for CFO2008. Change in sales ( $\Delta SALES$ ) has a positive mean for 2007 at 0.09 and the

standard deviation of operating revenue (OPREV) is less for other firms compared to benchmark beaters with a mean of 0.20. Table 2, Panel B shows the frequency loss (FREQLOSS) for other firms is 53.50 per cent, indicating that from 2005 to 2007 just over half of other firms incurred a loss.

Table 2, Panel C outlines the descriptive statistics for just miss firms. The mean cash flow from operations (CFO2007) is negative for 2007 at -0.24. This negative mean is expected given that just miss firms report small earnings losses. The mean change in sales ( $\Delta$ SALES) is positive for just miss firms at 0.07 and mean operating cycle (OPCYC) is 100.87 days. Just miss firms has a very similar mean operating revenue (OPREV) compared to other firms with an average of 0.21 compared to 0.20 for other firms. The frequency loss (FREQLOSS) is 100 per cent for other firms given that they all report small losses.

## **Results**

### **Earnings Distribution tests**

Earnings distribution tests are conducted to measure the number of firms that narrowly achieve positive earnings and positive earnings change benchmarks. A larger than expected number of firms immediately above zero indicates that firms are manipulating their earnings to achieve those earnings benchmarks. The main analysis of this study considers whether benchmark beaters have higher discretionary accruals compared to just miss firms and other firms. However, prior to presenting this analysis, evidence is provided as to whether a discontinuity exists at zero for positive earnings and positive earnings change benchmarks. Earnings measures used to conduct distribution of earnings tests are NPAT and Basic EPS.

**Figure 1: Positive Earnings 2007 (NPAT)**

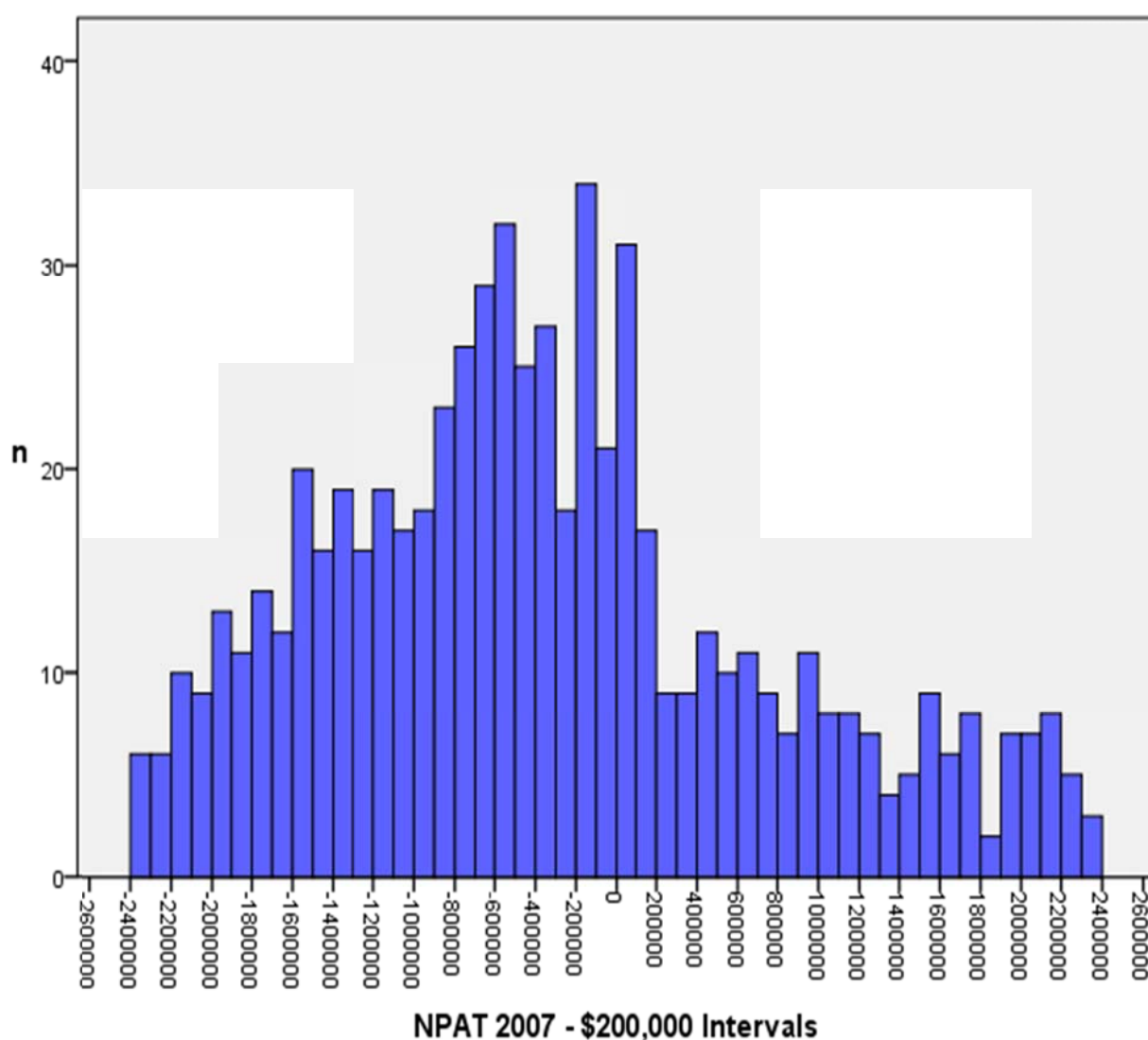


Figure 1 shows the earnings distribution for ASX companies during 2007 using NPAT as the earnings metric. Firms are grouped in to intervals of NPAT \$200,000 to gauge whether a discontinuity at zero exists. Initially, intervals of 100,000 were tested for comparison purposes to previous literature although the number of firms in each interval (100,000) was not large enough to provide valid analysis (Coulton *et al.* 2005). Again, the test examines the distribution of NPAT around the zero benchmark and evaluates if there is a significantly larger than expected amount of firms reporting a small positive NPAT.

Visual observation of Figure 1 shows that the immediate interval above zero (greater than zero and less than or equal to 200,000) has a lower frequency of firms reporting a small positive NPAT compared to the immediate interval below zero ( $<0 - \leq -200,000$ ). Significant results were not found for the immediate interval above zero with a t-statistic of 0.00. Visual examination and the t-test do not suggest that firms on average are managing their earnings upwards to report a small positive NPAT.

**Figure 2: Positive Earnings Changes 2006/2007 (NPAT)**

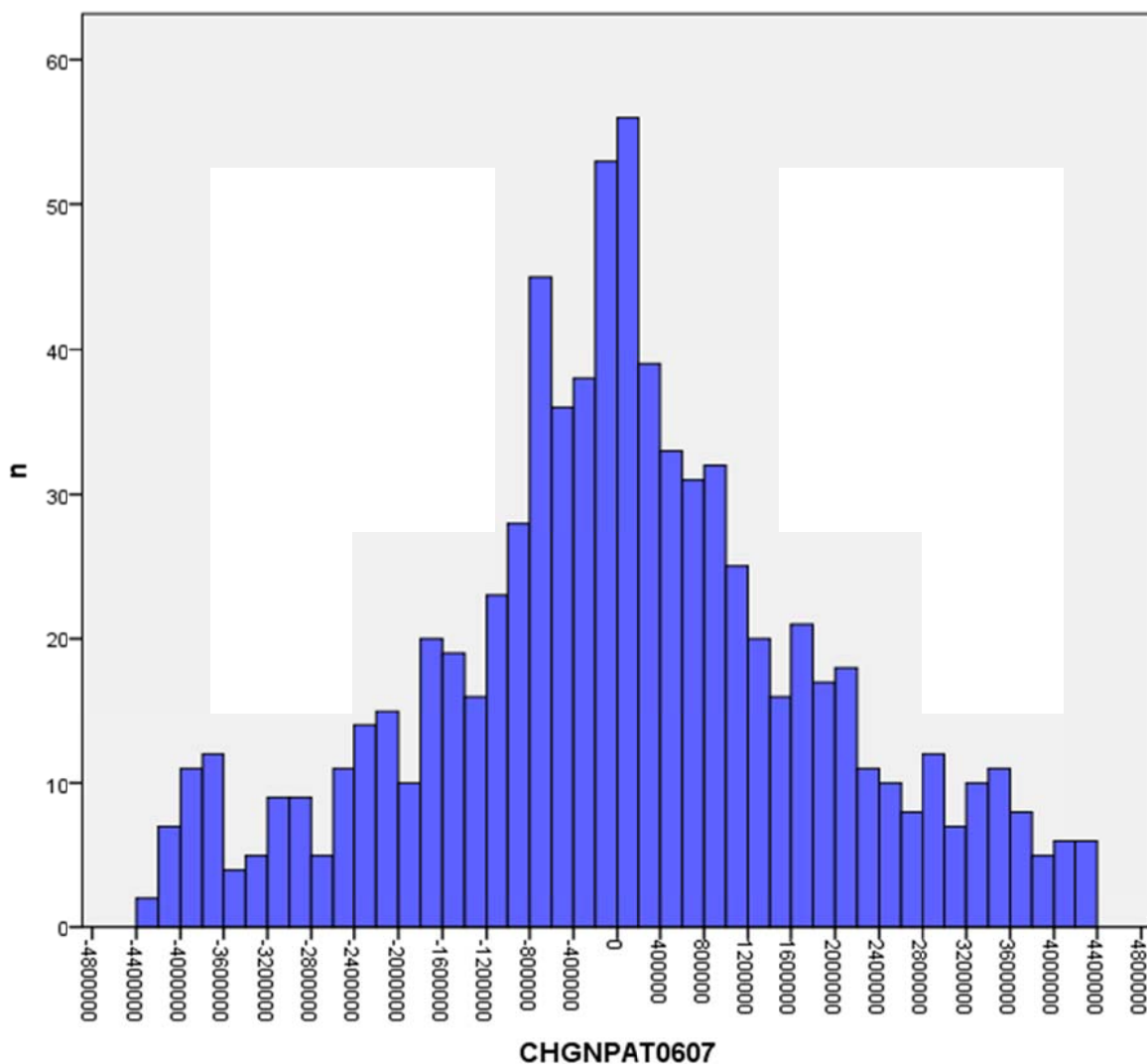


Figure 2 shows the changes in NPAT for Australian firms listed on the ASX from 2006 to 2007. Similar to the previous earnings distribution test reported in Figure 1, intervals of NPAT

\$200,000 were chosen. Visually, the earnings distribution for changes in NPAT (2006/2007) shows a similar number of firms in the immediate interval just above zero ( $<0 - \leq 200,000$ ) compared to the immediate interval just below zero. The t-test supports this result with a t-statistic of 0.65. Visually, the histogram in Figure 2 resembles the shape of a normal distribution, indicating there is no evidence to suggest that firms are managing their earnings to report a small positive NPAT change.

**Figure 3: Positive Earnings 2007 (Basic EPS)**

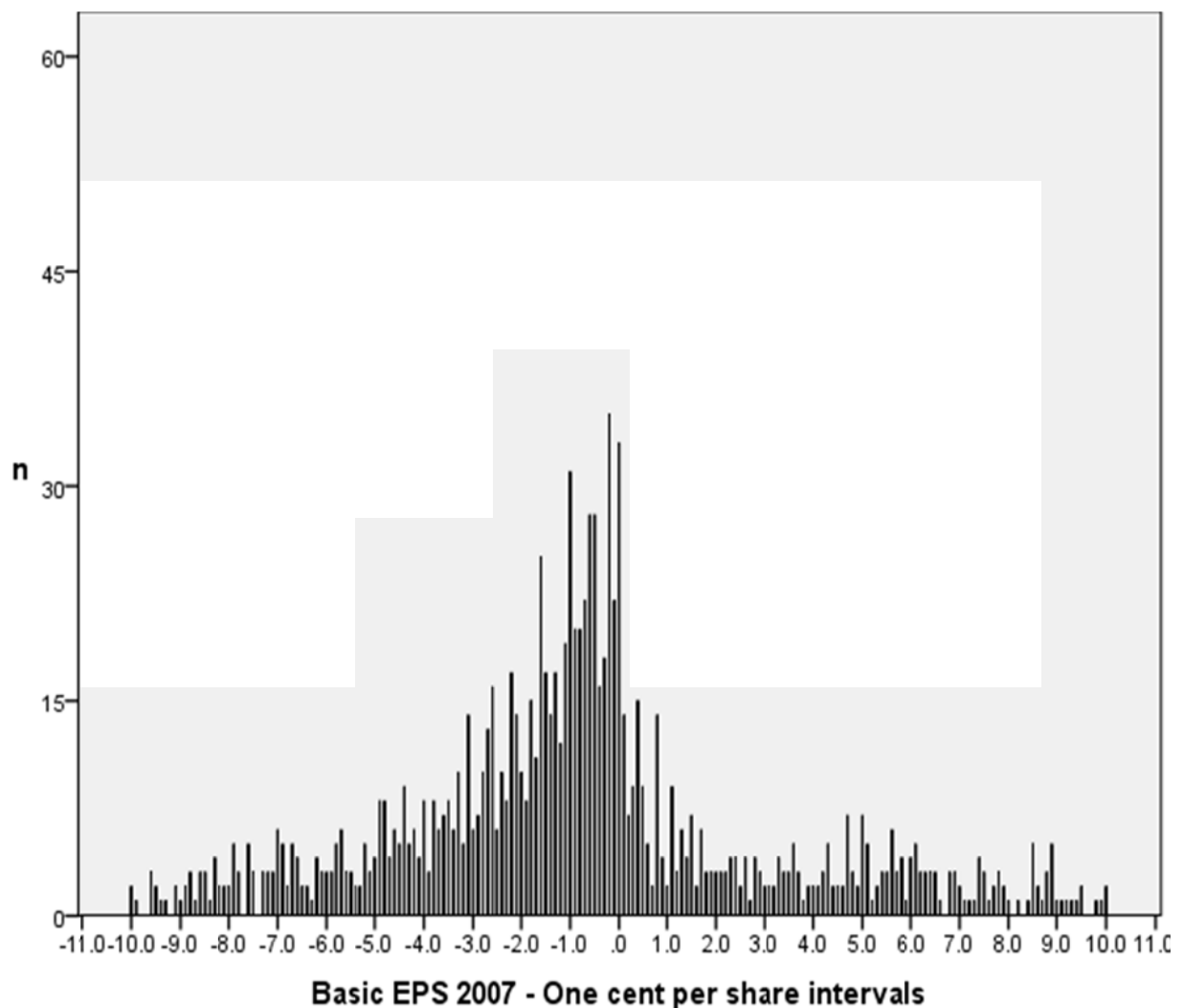


Figure 3 shows the distribution of earnings (Basic EPS) for ASX listed firms in 2007. This initial test is based on the level of earnings reported by ASX companies using Basic EPS data.

An interval of one cent per share ( $< 0$  cent EPS  $- \leq 1$  cent EPS) is used to measure the number of firms in each interval. Visual inspection of Figure 3 reveals a larger number of firms reporting an EPS measure between zero and minus one cent per share compared to firms reporting an EPS result between zero and one cent per share. Statistically, there is a significantly larger number of firms reporting an EPS measure between zero and minus one cent per share compared to firms reporting an EPS between zero and one cent per share ( $t=36.69$  and  $p=0.00$ ). The same result was also found for testing an interval width of half a cent per share. Significantly more firms reported an EPS result just below zero ( $t=9.43$  and  $p=0.00$ ).

**Figure 4: Positive Earnings Changes 2006/2007 (Basic EPS)**

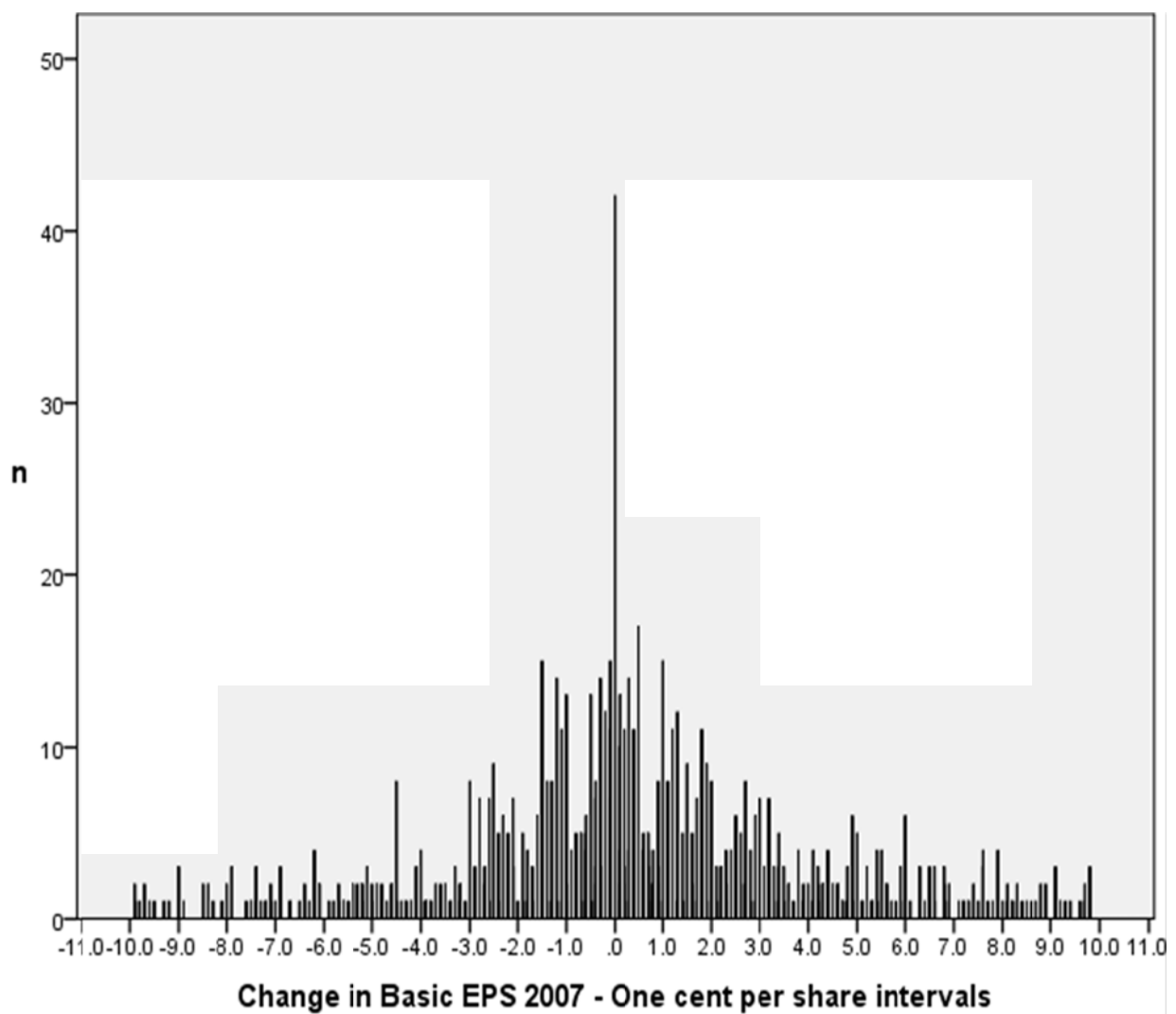




Figure 4 demonstrates the distribution of changes in earnings for ASX companies based on EPS results from 2006 to 2007. Visual comparison of the immediate one cent interval either side of zero indicates that the number of firms in the immediate interval above zero and the immediate interval below zero are similar. The t-statistic is significant for the one cent interval immediately above zero ( $t=16.00$  and  $p=0.00$ ). However, the t-statistic is also significant for the one cent interval below zero ( $t=16.63$  and  $p=0.00$ ). Additional analysis using half cent intervals also yields t-statistics which are significant for each half a cent per share immediately above and below zero.

In summary, for the earnings distribution tests there was little or no evidence suggesting that Australian firms are managing their earnings to achieve positive earnings and positive earnings changes. Prior Australian studies including Holland *et al.* (2003) and Coulton *et al.* (2005) identified discontinuities at zero for positive earnings and earnings changes. However, the deflators used by Holland *et al.* (2003) and Coulton *et al.* (2005) have been identified by subsequent research as potentially having accentuated the discontinuity at zero. This study has used two earnings metrics including NPAT without scaling and Basic EPS. These two earnings metrics have been identified as providing incremental information using earnings distribution tests (Durtschi *et al.* 2009). Using Basic EPS and NPAT without scaling, discontinuities have not been identified at zero for positive earnings or positive earnings changes.

The next section of analysis examines whether those firms that fall in to the category of benchmark beaters have lower earnings quality measures. Accrual quality models will be used to test the hypothesis that benchmark beaters on average report higher discretionary accruals compared to just miss firms and other firms.

## **Results –Accrual Based Models**

Accrual based models are used to test the hypothesis that benchmark beating firms have lower discretionary accruals quality compared to non-benchmark beating firms. While versions of the Dechow *et al.* (2002) accruals quality model are the focus of this study, measures of earnings quality using the Jones model (1991) are included for comparison purposes and to further validate results. Companies falling in to the first two intervals above zero for small positive earnings and small positive earnings changes (intervals 1 and 2) are identified as benchmark beaters. Recall that benchmark beaters are expected to manage earnings upwards to achieve benchmarks. The analysis tests if benchmark beating firms have lower earnings quality compared to non-benchmark beating firms. Non-benchmark beating firms are identified as just miss firms and other firms. Just miss firms fall in to the first two intervals below zero (intervals -1 and -2) and other firms include all other firms that are not benchmark beaters.

Table 3 provides results of comparisons of earnings quality measures for benchmark beating firms, just miss firms and other firms based on firms reporting a positive earnings result for NPAT. Table 4 shows results of tests for reporting a positive earnings change (NPAT). Table 5 presents results for benchmark beaters, just miss firms and other firms based on firms reporting a positive result for Basic EPS. Lastly, Table 6 shows results to identify whether benchmark beaters manage their earnings to report a positive Basic EPS change.

**Table 3: Positive Earnings (NPAT)**

Panel A: Benchmark Beaters compared to all other firms

	<u>Benchmark Beaters</u>			<u>Others Firms</u>			<u>Test for Differences</u>	
	n	Mean	Median	n	Mean	Median	<i>t</i> -statistic	p-value
DDMCNINN	42	0.07	0.07	970	0.09	0.09	-2.92	0.01
DDMCNDISC	38	0.08	0.06	908	0.07	0.05	-0.36	0.72
MCNDD	70	0.12	0.05	117	0.09	0.04	1.46	0.07
JONESDISC	28	0.01	0.03	941	-0.01	0.00	-0.11	0.91
MODJONESDISC	28	0.02	0.04	940	0.00	0.00	-.13	0.90

Panel B: Benchmark Beaters compared to just miss firms

	<u>Benchmark Beaters</u>			<u>Just Miss Firms</u>			<u>Test for Differences</u>	
	n	Mean	Median	n	Mean	Median	<i>t</i> -statistic	p-value
DDMCNINN	42	0.07	0.07	26	0.07	0.07	-0.45	0.66
DDMCNDISC	38	0.08	0.06	21	0.07	0.05	0.30	0.77
MCNDD	70	0.06	0.02	28	0.10	0.04	-0.94	0.35
JONESDISC	28	0.01	0.03	23	0.12	0.03	-1.39	0.09
MODJONESDISC	28	0.02	0.04	22	0.13	0.03	-1.60	0.06

Panel C: Just miss firms compared to other firms

	<u>Just Miss Firms</u>			<u>Other firms</u>			<u>Test for Differences</u>	
	n	Mean	Median	n	Mean	Median	<i>t</i> -statistic	p-value
DDMCNINN	42	0.07	0.07	986	0.09	0.09	1.88	0.03
DDMCNDISC	38	0.07	0.06	925	0.07	0.05	0.14	0.89
MCNDD	70	0.96	0.04	104	0.09	0.04	-0.14	0.88
JONESDISC	23	0.12	0.03	946	-0.02	0.03	-1.63	0.06
MODJONESDISC	22	0.13	0.03	946	0.00	0.00	-1.69	0.05

Accrual measures for benchmark beating firms (small positive profit), intervals 1 and 2, compared to other firms (Panel A), compared to small loss firms (intervals -1 and -2) (Panel B)

Other firms include non-benchmark beating firms for each particular test

Each interval is 1% of NPAT scaled by Total Assets

Two tailed tests of significance reported if the direction is predicted

*Where:*

*DDMCNINN = Francis et al. version, of Dechow and Dichev model (2005) - Inmate Accruals*

*DDMCNDISC = Francis et al. version of Dechow and Dichev model (2005) - Discretionary Accruals*

*MCNDD = McNichols version of Dechow and Dichev model (2002) – Accruals Quality*

*JONESDISC = Jones model (1991) - Discretionary Accruals*

*MODJONESDISC = Modified Jones model (1995) – Discretionary Accruals*

### **Accrual Based Models – Positive Earnings (NPAT)**

NPAT scaled by total assets is the earnings metric used in Table 3 to define benchmark beaters, just miss firms and other firms. Table 3, Panel A reports comparisons of accruals quality of benchmark beaters against other firms. Other firms are the non-benchmark beating firms in Table 3, panel A. The MCNDD measure reports significantly lower accruals quality for benchmark beaters as opposed to other firms ( $t=1.46$  and  $p=0.07$ ). However, the DDMCNDISC measure does not report significantly higher discretionary accruals for benchmark beaters compared to the other firms.

The DDMCNDISC model reports a more reliable and valid measure for discretionary accruals because the DDMCNDISC model controls for additional variables which impact accruals quality, further isolating discretionary accruals reported by firms. The analysis in Table 3, Panel A does not support the hypothesis that benchmark beaters have lower discretionary accruals quality. Benchmark beaters do not demonstrate on average a lower discretionary accruals quality compared to other firms in a small positive earnings context.

Table 3, Panel B compares benchmark beaters to just miss firms. Just miss firms fall in to the first two intervals immediately below zero (i.e. -1 and -2), which represent minus one per cent and minus two per cent of NPAT, scaled by total assets. The DDMCNDISC measure is not significantly different for benchmark beaters compared to just miss firms, with a mean of 0.08

and 0.07 respectively (Table 3, Panel B). However, the JONESDISC measure reports higher discretionary accruals for just miss firms as opposed to benchmark beaters, with a t-statistic of -1.39 and value of  $p=0.09$ . The MODJONESDISC model also reports higher discretionary accruals for just miss firms ( $t=-1.39$  and  $p=0.06$ ).

This finding of higher discretionary accruals for just miss firms does not support the hypothesis which predicted higher discretionary accruals for benchmark beaters. It is possible that the higher discretionary measures reported by the JONESDISC and MODJONESDISC measure for just miss firms are being driven by nondiscretionary factors. McNichols (2002) indicates that estimates of discretionary accruals based on the Jones model are likely to include a substantial component of nondiscretionary accruals. Table 3, Panel B does not support the hypothesis that benchmark beaters will have higher discretionary accruals than just miss firms.

Table 3, Panel C compares just miss firms to all other firms. The JONESDISC measure reports higher discretionary accruals for just miss firms compared to other firms at a marginal significance level of 0.06. The MODJONESDISC measure also reports higher discretionary accruals for just miss firms compared to others firms at a significance level of 0.05. Versions of the Dechow *et al.* (2002) model in Panel C, Table 3 do not report significantly different discretionary accruals for just miss firms compared to other firms. For example, the DDMCNDISC measure indicates the same magnitude of discretionary accruals for just miss firms and other firms with mean discretionary accruals of 0.07 for just miss firms and other firms.

Additional results in Table 3, Panel C report significantly higher innate accruals for just miss firms compared to other firms using the DDMCNINN measure at  $t=-1.88$  and  $p=0.03$ . These

significant results reported by the DDMCNINN measure relate to the quality of accruals for firms which are impacted by fundamental factors of the firm and not accruals quality impacted by discretionary decisions of management. The results reported in Table 3, Panel C do not provide support for the hypothesis that benchmark beaters manage their earnings more significantly than just miss firms.

In summary, the results do not suggest that benchmark beaters manage their earnings to report a positive NPAT performance. Overall, results do not support the hypothesis which states that benchmark beaters are expected to have on average a higher level of discretionary accruals compared to other firms and just miss firms.

#### **Accrual Based Models – Positive Earnings Changes (NPAT)**

Table 4 reports results to determine whether companies listed on the ASX manage their earnings to beat earnings reported in the previous year. Similar to the assessment of firms reporting small positive earnings, firms who report small earnings increases are identified as benchmark beaters. Benchmark beaters are defined as firms who fall in to intervals 1 and 2 with each interval constructed as half a per cent of the change in NPAT, scaled by total assets. Just miss firms fall in to intervals just below zero (intervals -1 and -2) and other firms represent non-benchmark beaters for each test conducted.

**Table 4: Positive Earnings Changes (NPAT)**

Panel A: Benchmark Beaters compared to all other firms

	<u>Benchmark Beaters</u>			<u>Other Firms</u>			<u>Test for Differences</u>	
	n	Mean	Median	n	Mean	Median	<i>t</i> -statistic	p-value
DDMCNINN	65	0.07	0.07	947	0.09	0.09	4.85	0.00
DDMCNDISC	61	0.05	0.04	885	0.07	0.05	4.26	0.00
MCNDD	62	0.04	0.03	100	0.10	0.04	6.83	0.00
JONESDISC	55	0.05	0.03	914	-0.02	-0.01	-2.30	0.02
MODJONESDISC	55	0.05	0.03	913	0.00	0.00	-1.54	0.06

Panel B: Benchmark Beaters compared to just miss firms (positive earnings changes)

	<u>Benchmark Beaters</u>			<u>Just Miss Firms</u>			<u>Test for Differences</u>	
	n	Mean	Median	n	Mean	Median	<i>t</i> -statistic	p-value
DDMCNINN	65	0.07	0.07	52	0.07	0.08	0.62	0.54
DDMCNDISC	61	0.05	0.04	49	0.06	0.03	0.96	0.34
MCNDD	62	0.04	0.03	55	0.06	0.02	1.18	0.24
JONESDISC	55	0.05	0.03	47	0.03	0.04	-0.36	0.72
MODJONESDISC	55	0.05	0.03	47	0.03	0.04	-0.44	0.67

Panel C: Just miss firms compared to other firms (positive earnings changes)

	<u>Just Miss Firms</u>			<u>Other firms</u>			<u>Test for Differences</u>	
	n	Mean	Median	n	Mean	Median	<i>t</i> -statistic	p-value
DDMCNINN	52	0.07	0.08	960	0.09	0.09	3.56	0.00
DDMCNDISC	49	0.06	0.03	897	0.07	0.05	0.69	0.49
MCNDD	55	0.06	0.02	105	0.09	0.04	2.00	0.05
JONESDISC	47	0.03	0.04	922	-0.01	-0.01	-0.41	0.68
MODJONESDISC	47	0.03	0.04	911	0.00	0.00	-0.21	0.84

Accrual measures for benchmark beating firms (small earnings changes), intervals 1 and 2, compared to other firms (Panel A), compared to small loss firms (intervals -1 and -2) (Panel B)

Other firms include non-benchmark beating firms for each particular test

Each interval is a 0.5% change in NPAT scaled by Total Assets

Two tailed tests of significance if the direction is predicted

*Where:*

*DDMCNINN = Francis et al. version, of Dechow and Dichev model (2005) - Innate Accruals*

*DDMCNDISC = Francis et al. version of Dechow and Dichev model (2005) - Discretionary Accruals*

*MCNDD = McNichols version of Dechow and Dichev model (2002) – Accruals Quality*

*JONESDISC = Jones model (1991) - Discretionary Accruals*

*MODJONESDISC = Modified Jones model (1995) – Discretionary Accruals*

Table 4, Panel A indicates conflicting results between versions of the Dechow *et al.* models and versions of the Jones models. The DDMCNDISC measure shows that other firms have significantly lower accruals quality compared to benchmark beaters ( $t=4.26$  and  $p=0.00$ ). The MCNDD measure also reports lower accruals quality for other firms against benchmark beaters ( $t=6.83$  and  $p=0.00$ ). In contrast the JONESDISC measure shows significantly lower accruals quality for benchmark beaters compared to other firms ( $t=-2.30$  and  $p=0.02$ ). The MODJONESDISC measure also indicates that benchmark beaters have higher discretionary accruals (lower accrual quality) compared to other firms, although this measure is only marginally significant at  $t= -1.54$  and  $p=0.06$ .

The contrasting results reported in Table 4, Panel A could be potentially impacted by the small sample used in these tests. When testing accrual models, small samples are required to detect economically plausible levels of earnings management. However, inconsistent results can be a limitation of smaller samples. The DDMCNDISC result does not support the hypothesis of this study and reports higher discretionary accruals for other firms compared to benchmark beaters in the context of small positive earnings changes.

Table 4, Panel B does not show any significant results when comparing benchmark beaters to just miss firms in the context of small positive earnings changes. Results show that discretionary earnings for benchmark beaters are not significantly different to discretionary



earnings for just miss firms. It was expected that benchmark beaters would have on average a higher level of discretionary accruals compared to just miss firms.

Additional tests in Table 4, Panel C compare accruals quality for just miss firms and other firms. The DDMCNINN measure shows significantly higher innate accruals for the other firms compared to the just miss firms ( $t= 3.56$  and  $p=0.00$ ). However, this does not provide any incremental information regarding discretionary earnings. Table 3, Panel C does not give any additional support for benchmark beaters being earnings managers.

Given the mixed results in Table 4, Panel A and the lack of significant results in Panel B and C of Table 4, it cannot be concluded that benchmark beating firms manage their NPAT earnings to beat the previous year's earnings benchmark. Table 4 does not support the hypothesis that benchmark beaters manage their earnings to report positive earnings changes.

#### **Accrual Based Models – Positive Earnings (Basic EPS)**

To further assess whether firms manage earnings to beat benchmarks, tests are conducted using EPS as the earnings metric. The tests compare firms reporting a small positive EPS and small positive earning changes (Basic EPS). Discretionary accruals for benchmark beaters are compared to other firms and just miss firms to test for earnings management. Benchmark beaters are defined as firms that report an EPS result between zero and one cent per share, with just miss firms reporting an EPS figure between zero and minus one cent per share. The other firms group includes any firm within the sample that is not included in the benchmark beater or just miss groups.

**Table 5: Positive Earnings (Basic EPS)**

Panel A: Benchmark Beaters compared to all other firms (EPS – 1 cent)

	<u>Benchmark Beaters</u>			<u>Other Firms</u>			<u>Test for Differences</u>	
	n	Mean	Median	n	Mean	Median	<i>t</i> -statistic	p-value
DDMCNINN	53	0.11	0.11	952	0.09	0.09	-4.43	0.00
DDMCNDISC	50	0.10	0.08	879	0.07	0.05	-1.74	0.04
MCNDD	54	0.13	0.06	984	0.09	0.04	-1.42	0.08
JONESDISC	48	0.30	0.08	899	-0.01	0.00	-2.39	0.01
MODJONESDISC	48	0.31	0.07	898	-0.02	0.00	-2.44	0.01

Panel B: Benchmark Beaters compared to just miss firms (EPS – 1 cent)

	<u>Benchmark Beaters</u>			<u>Just Miss Firms</u>			<u>Test for Differences</u>	
	n	Mean	Median	n	Mean	Median	<i>t</i> -statistic	p-value
DDMCNINN	53	0.11	0.11	129	0.11	0.10	0.37	0.71
DDMCNDISC	50	0.10	0.08	119	0.10	0.07	0.18	0.86
MCNDD	54	0.13	0.06	146	0.10	0.04	0.77	0.44
JONESDISC	48	0.30	0.08	139	0.04	0.00	1.87	0.03
MODJONESDISC	48	0.31	0.07	139	0.06	0.01	1.77	0.04

Panel C: Just miss firms compared to other firms (EPS – 1 cent)

	<u>Just Miss Firms</u>			<u>Other firms</u>			<u>Test for Differences</u>	
	n	Mean	Median	n	Mean	Median	<i>t</i> -statistic	p-value
DDMCNINN	129	0.11	0.10	876	0.08	0.09	-6.63	0.00
DDMCNDISC	119	0.10	0.07	810	0.07	0.05	-2.66	0.01
MCNDD	146	0.10	0.04	892	0.09	0.04	-1.02	0.31
JONESDISC	139	0.04	0.00	808	-0.02	0.00	-0.82	0.41
MODJONESDISC	139	0.06	0.01	807	-0.01	0.00	-0.82	0.41

Accrual measures for benchmark beating firms (small positive profit EPS), compared to other firms (Panel A), compared to small loss firms (Panel B)

Other firms include non-benchmark beating firms for each particular test

0 cents per share < Benchmark beaters ≤ 1 cent per share

-1 cent per share ≤ Small loss firms < 0 cents per share

0 EPS excluded from sample (33 EPS excluded from sample)

Two tailed tests of significance if the direction is predicted

*Where:*

*DDMCNINN = Francis et al. version, of Dechow and Dichev model (2005) - Innate Accruals*

*DDMCNDISC = Francis et al. version of Dechow and Dichev model (2005) - Discretionary Accruals*

*MCNDD = McNichols version of Dechow and Dichev model (2002) – Accruals Quality*

*JONESDISC = Jones model (1991) - Discretionary Accruals*

*MODJONESDISC = Modified Jones model (1995) – Discretionary Accruals*

Table 5, Panel A indicates that the DDMCNDISC measure shows significantly higher discretionary accruals for benchmark beaters compared to other firms ( $t=-1.74$  and  $p= 0.04$ ). The JONESDISC and MODJONESDISC measures are also consistent with the results of the DDMCNDISC measure in Table 5, Panel A demonstrating significantly higher discretionary earnings for benchmark beaters as opposed to other firms. These results are significant for the JONESDISC measure and the MODJONESDISC measure ( $t=-2.39$ ,  $p=0.01$ , and  $t=-2.44$ ,  $p=0.01$  respectively).

These results are interesting given that our previous tests using NPAT did not show higher discretionary accruals for benchmark beaters compared to other firms. The DDMCNDISC measure has been identified in this study as currently one of the most direct measures for capturing discretionary accruals. The MCNDD measure in Table 5, Panel A has mean accruals quality of 0.13, indicating lower accruals quality for benchmark beaters compared to other firms at a marginal significance ( $t=-1.42$ ,  $p=0.08$ ). In addition, the JONESDISC, MODJONESDISC measure and the MCNDD measure add further consistency to the results identified by the DDMCNDISC measure. The DDMCNDISC measure supports this study's hypothesis, identifying benchmark beaters as having higher discretionary accruals compared to the other firms group.

Table 5, Panel B compares benchmark beaters to just miss firms, no significant difference is found between discretionary earnings for benchmark beaters or just miss firms using the DDMCNDISC measure. However, the JONESDISC and MODJONESDISC measures show significantly higher discretionary earnings for benchmark beaters compared to just miss firms ( $t=1.87$ ,  $p=0.03$  and  $t=1.77$ ,  $p=0.04$  respectively).

In this case, comparing benchmark beaters to just miss firms does not provide clear evidence of earnings management by firms reporting a small positive EPS result between zero and one cent per share. While the discretionary accruals for the JONESDISC and MODJONESDISC measures are significantly higher for the benchmark beaters this is not supported by the DDMCNDISC model. Considering that research suggests that the DDMCNDISC measure has greater explanatory power than the Jones models, benchmark beaters cannot be highlighted as earnings managers in this instance (McNichols, 2002). Table 5, Panel B does not provide substantive support for the hypothesis that benchmark beaters have higher discretionary accruals.

Table 5, Panel C compares just miss firms to other firms with no significant results highlighting a difference between discretionary earnings reported for just miss firms or other firms. Using the DDMCNINN measure, innate accruals are found to be significantly higher for just miss firms ( $t=-6.63$ ,  $p=0.00$ ). This information simply establishes that just miss firms have poorer quality accruals compared to other firms. Table 5, Panel C does not provide any further support to suggest that benchmark beaters manage their earnings more significantly than just miss firms or other firms based on a Basic EPS measure.

When evaluating benchmark beaters in the context of reporting a small positive Basic EPS result, mixed evidence suggests that benchmark beaters manage earnings more significantly than just miss firms and other firms. The DDMCNDISC measure in Table 5, Panel A found significantly higher discretionary accruals for benchmark beaters compared to other firms. While Table 5, Panel B found mixed evidence suggesting that benchmark beaters have higher discretionary accruals compared to just miss firms. Additional results in Table 5, Panel C compared just miss firms to other firms. The results in Table 5, Panel C did not suggest that benchmark beaters manage earnings more significantly than other firms or just miss firms.

Overall, analysis of benchmark beaters based on Basic EPS provides some evidence that benchmark beaters are managing their earnings, with higher discretionary earnings reported for benchmark beaters compared to all other firms. However, this evidence is not completely consistent with discretionary earnings found to be similar between benchmark beaters and just miss firms. Given that benchmark beaters do not have higher discretionary accruals compared to just miss firms, further analysis is warranted to establish the extent of earnings management in the context of firms reporting small positive profits (Basic EPS).

Interestingly, the benchmark beaters and just miss firms collectively had higher discretionary accruals compared to the other firms. This finding is mixed and does not support or reject the hypothesis that benchmark beaters manage their earnings to report a small EPS result. The finding is similar to that reported by Coulton *et al.* (2005), who identified benchmark beaters and just miss firms as having higher unexpected accruals compared to other firms.

## Accrual Based Models – Positive Earnings Changes (EPS)

Table 6 evaluates whether firms manage their earnings to beat prior year earnings using Basic EPS. To gauge whether firms are managing EPS to beat the previous year's EPS result, firms are identified as benchmark beaters, just miss firms and other firms. Benchmark beaters are defined as firms reporting an EPS result greater than zero and less than or equal to one cent per share, above the previous year's EPS result. Just miss firms are those firms reporting an EPS result less than zero and greater than or equal to one cent per share below the previous year's EPS result. The other firms group includes any firm within the sample that is not included in the benchmark beaters or just miss group.

**Table 6: Positive Earnings Changes (Basic EPS)**

Panel A: Benchmark Beaters compared to all other firms (EPS – 1 cent change)

	<u>Benchmark Beaters</u>			<u>Other Firms</u>			<u>Test for Differences</u>	
	n	Mean	Median	n	Mean	Median	t-statistic	p-value
DDMCNINN	137	0.10	0.10	844	0.09	0.09	-4.67	0.00
DDMCNDISC	129	0.08	0.06	788	0.07	0.05	-0.49	0.63
MCNDD	145	0.09	0.04	877	0.09	0.04	-0.04	0.97
JONESDISC	129	0.00	0.02	805	-0.01	-0.01	-0.21	0.83
MODJONESDISC	129	0.02	0.02	804	0.00	0.00	-0.16	0.87

Panel B: Benchmark Beaters compared to just miss firms (EPS – 1 cent change)

	<u>Benchmark Beaters</u>			<u>Just Miss Firms</u>			<u>Test for Differences</u>	
	n	Mean	Median	n	Mean	Median	t-statistic	p-value
DDMCNINN	137	0.10	0.10	117	0.10	0.10	-1.20	0.23
DDMCNDISC	129	0.08	0.06	115	0.08	0.07	-0.64	0.53
MCNDD	145	0.09	0.04	137	0.09	0.04	-0.23	0.82
JONESDISC	129	0.00	0.02	128	0.00	-0.01	-0.03	0.98
MODJONESDISC	129	0.02	0.02	128	0.01	0.00	0.08	0.94

Panel C: Just miss firms compared to other firms (EPS – 1 cent change)

	<u>Just Miss Firms</u>			<u>Other firms</u>			<u>Test for Differences</u>	
	n	Mean	Median	n	Mean	Median	t-statistic	p-value
DDMCNINN	117	0.10	0.10	856	0.09	0.09	-4.86	0.00
DDMCNDISC	115	0.08	0.07	794	0.07	0.05	-1.39	0.08
MCNDD	137	0.09	0.04	874	0.09	0.04	-0.21	0.83
JONESDISC	128	0.00	-0.01	795	-0.01	0.00	-0.19	0.85
MODJONESDIS	128	0.01	-0.00	794	0.00	0.00	-0.07	0.94

Accrual measures for benchmark beating firms (small earnings changes EPS), compared to other firms (Panel A), compared to small loss firms (Panel B)

Other firms include non-benchmark beating firms for each particular test

0 cents per share < Benchmark beaters ≤ 1 cent per share

-1 cent per share ≤ Small loss firms < 0 cents per share

0 EPS excluded from sample (42 EPS excluded from sample)

Two tailed tests of significance if the direction is predicted

*Where:*

*DDMCNINN = Francis et al. version, of Dechow and Dichev model (2005) - Innate Accruals*

*DDMCNDISC = Francis et al. version of Dechow and Dichev model (2005) - Discretionary Accruals*

*MCNDD = McNichols version of Dechow and Dichev model (2002) – Accruals Quality*

*JONESDISC = Jones model (1991) - Discretionary Accruals*

*MODJONESDISC = Modified Jones model (1995) – Discretionary Accruals*

Table 6, Panel A compares benchmark beaters to other firms on the basis that firms reporting Basic EPS results just above the previous year's EPS figure are more likely to manage their earnings in a discretionary manner. Discretionary earnings are not found to be significantly higher for benchmark beaters compared to the other firms group. The benchmark beaters do show significantly higher discrepancies between their accruals and cash flows compared to the other firms group (t=-4.67, p=0.00). However, this is established through the DDMCNINN measure which measures the quality of accruals due to innate factors of the firm. These initial findings do not support the hypothesis that benchmark beaters have significantly higher discretionary accruals compared to other firms.

Benchmark beaters are compared to just miss firms in Table 6, Panel B with no significant results suggesting that benchmark beaters have higher discretionary accruals than just miss firms. Just miss firms are also compared to other firms within Table 6, Panel C to gauge further evidence of firms managing their earnings based on the previous year's EPS result. Just miss firms demonstrate marginally significantly higher discretionary accruals than other firms using the DDMCNDISC measure ( $t=-1.39$ ,  $p=0.08$ ). While this result is significant, meaningful interpretation cannot be achieved due to the lack of significant results in the previous tests when comparing benchmark beaters to other firms and benchmark beaters to just miss firms (Table 6, Panels B and C). Panel C, Table 6 also shows significantly poorer innate accruals for other firms compared just miss firms ( $t=-6.63$ ,  $p=0.00$ ).

Using accrual based models, benchmark beaters were compared to just miss firms and other firms in the context of beating the previous year's EPS result to gauge whether benchmark beaters manage their earnings to achieve positive earnings changes. No significant evidence was found to suggest that firms manage their earnings to beat the previous year's EPS result. These findings are based on the power of aggregate accrual models to capture discretionary earnings. The results provide little evidence to suggest that benchmark beating firms manage their earnings to surpass the previous year's EPS result.



### **Additional Analysis – Earnings Persistence**

The analysis presented does not support the hypothesis that small positive earnings and positive earnings changes are signals of earnings management. It is possible that this is due to the inability of the accrual quality measures to identify earnings management. Tests of significance have been based on mean discretionary accruals for each group including benchmark beaters, other firms and just miss firms. Comparison of groups based on averages for discretionary accruals may be diluting the magnitude of earnings management conducted by benchmark beaters. Statistical probabilities are such that a percentage of firms fall naturally in to the benchmark beating group without actually being earnings managers. Alternatively, earnings management by Australian firms is non-existent or conducted on a very small scale.

To further test whether benchmark beaters manage earnings the earnings persistence of benchmark beaters is examined. Prior research has established that discretionary accruals are less persistent than normal accruals, indicating that firms with larger discretionary accruals are likely to have lower earnings persistence (Xie, 2001). Other examples include the impact of restated earnings on the earnings persistence of firms, with lower earnings persistence reported for firms based on their non-restated earnings as opposed to their restated earnings (Hee, 2011). Coulton *et al.* (2005) tested the earnings persistence of unexpected accruals calculated by the Jones model to evaluate how well the Jones model identified unexpected accruals. Earnings persistence of the unexpected accruals was then evaluated against the normal accruals to gauge the accuracy of the Jones model.

This additional analysis is being conducted to evaluate the validity of the finding that firms reporting a small positive Basic EPS result are more likely to manage their earnings. Earnings persistence is tested for each benchmark beating firm to identify if their earnings persistence is

significantly different from other firms during 2007. Other firms refer to any firm that is not a benchmark beater during 2007 and is listed on the ASX. If benchmark beaters report low earnings persistence during the test period this is an indication of earnings management, based on the implication that firms with higher discretionary earnings report lower earnings persistence (Xie, 2001).

Earnings persistence is a function of the fundamental performance of a firm and the accounting system which measures the earnings performance (Dechow *et al.* 2010). The aim of this analysis is to evaluate earnings persistence changes due to the manipulation of discretionary accruals. Fundamental performance of each firm has not been controlled for in this study, and is a limitation of the earnings persistence measures conducted. Due to the impact of growth on earnings persistence this study only evaluates the 2006 – 2009 period of earnings persistence in an attempt to reduce the impact of growth on the firm-specific regressions (Fairfield, Whisenant and Yohn, 2003).

To evaluate the earnings persistence of benchmark beaters and other firms this study implements an earnings persistence test first introduced by Freeman, Ohlson and Penman (1982). Two groups are established for comparative analysis to test the earnings persistence of Australian companies that report a small positive Basic EPS result in 2007. Firstly, a benchmark beating group is identified. This group includes 81 ASX listed firms reporting a Basic EPS greater than zero cents per share and less than or equal to one cent per share for 2007. Secondly, a group of firms is identified for 2007 that did not report a small positive Basic EPS result.

Although 2007 is the primary year of this study and the year where earnings management is predicted by benchmark beaters, earnings persistence is measured for the period 2006 to 2009 to consider the persistence of earnings before and after the 2007 test year. Earnings persistence is measured after the test year of 2007 because earnings persistence is expected to increase after the year of earnings management.

Earnings persistence is calculated based on the relation between current earnings and future earnings (Freeman *et al.* 1982). Earnings for the following year is the dependant variable and is regressed on earnings for the contemporary year to establish the level of earnings persistence. Earnings is proxied by earnings before interest and taxes (Clinch, Fuller, Govendir and Wells, 2012). The earnings persistence model is displayed in Equation 10 below.

$$Earnings_{t+1} = \alpha_0 + \alpha_1 Earnings_t + v_{t+1} \quad (11)$$

Where:

*Earnings<sub>t+1</sub>* is EBIT / average total assets for t+1  
*Earnings<sub>t</sub>* is EBIT / average total assets for t

Earnings persistence is calculated for the 2006/2007, 2007/2008 and 2008/2009 periods.

**Table 7: Descriptive Statistics – Benchmark Beaters and Other firms**

Panel A: Benchmark Beaters (n=81)

<b>Year</b>	<b>Mean</b>	<b>Median</b>	<b>Std Dev</b>	<b>Minimum</b>	<b>Maximum</b>
EBIT2006	-0.12	-0.01	0.46	-3.02	0.47
EBIT2007	0.04	0.03	0.22	-1.30	1.00
EBIT2008	-0.012	-0.03	0.29	-1.27	0.38
EBIT2009	-0.17	-0.07	0.43	-2.50	0.68

Panel B: Other Firms (n=1111)

<b>Year</b>	<b>Mean</b>	<b>Median</b>	<b>Std Dev</b>	<b>Minimum</b>	<b>Maximum</b>
EBIT2006	-0.16	-0.04	0.49	-5.52	1.58
EBIT2007	-0.16	-0.04	0.47	-4.74	1.51
EBIT2008	-0.21	-0.07	0.60	-6.20	1.52
EBIT2009	-0.27	-0.07	1.02	-16.01	2.87

Benchmark Beaters (&lt; 0 cents per share - ≤ 1 cent per share)

Other firms includes all ASX listed firms during 2007 excluding Benchmark Beaters

Censored highest and lowest variable for each period

EBIT is normalized for each year by total average assets

Where EBIT is earnings before interest and taxes

Total average assets = ((opening period total assets + closing period total assets)/2)

Table 7, Panel A report's the descriptive statistics for benchmark beaters from 2006 to 2009.

The mean EBIT for 2006 is -0.12 with a median of -0.01. The mean EBIT and median EBIT for 2007 benchmark beaters is 0.03 and 0.04 respectively. Mean EBIT and median EBIT reduce to -0.01 and -0.03 respectively for benchmark beaters in 2008. Finally, mean EBIT decreases in 2009 to -0.17 and median EBIT falls to -0.07 for benchmark beaters.

Table 7, Panel B shows the annual descriptive statistics for other firms from 2006 to 2009. The mean EBIT and median EBIT for 2006 for other firms is -0.16 and -0.04 respectively. In 2007,

mean EBIT and median EBIT are the same as 2006 with a mean of -0.16 and a median of -0.04. Other firms mean EBIT and median EBIT decrease in 2008 to -0.21 and -0.07 respectively. The mean EBIT of other firms decreases even further in 2009 to -0.27 and median EBIT stays constant at -0.07. Standard deviation is highest for other firms in 2009 at 1.02 with a minimum of -16.01 and a maximum of 2.87. The descriptive statistics of the other firms group demonstrate the impact of the global financial crisis with ASX listed firms reporting lower mean EBIT in 2008 and 2009.

**Table 8: Earnings Persistence Measures – Benchmark Beaters**

<b>Year</b>	<b>N</b>	<b>Beta</b>	<b>R Squared</b>	<b>p-value</b>
2006/2007	67	0.01	-0.02	0.91
2007/2008	68	0.35	0.07	0.02
2008/2009	67	0.88	0.52	0.00

Small Positive EPS group for 2007 – Benchmark Beaters

Australian firms reporting Basic EPS < 0 cents per share -  $\leq$  1 cent per share in 2007

For each regression, censored highest and lowest dependent variable

Results from ordinary least squares regression of future earnings on current earnings for benchmark beating group for the period from 2006 to 2009.

Table 8 outlines the earning persistence results for benchmark beaters from 2006 to 2009. Analysis of the benchmark beaters demonstrates low earnings persistence from 2006 to 2007 with a beta of 0.01 and a p-value of 0.91. A small coefficient implies low earnings persistence and a p-value of 0.91 indicates a limited relationship between earnings for 2006 and 2007. The adjusted R-square is -0.02 for 2007 earnings regressed on 2006 earnings, again suggesting that 2006 earnings have little relation to 2007 earnings reported for benchmark beaters. These are interesting results given that earnings management is expected to occur in 2007 due to these benchmark beaters reporting a small positive Basic EPS result.

Alternatively, the earnings persistence for benchmark beaters increases considerably after the predicted year of earnings management in 2007 (table 8). The coefficient for 2008 earnings regressed on 2007 earnings is 0.35 ( $p=0.02$ ). This indicates substantially higher earnings persistence compared to the previous year. Additionally, this demonstrates a clear relationship between earnings reported for 2007 and 2008 with  $p=0.02$ . The adjusted R-square of 0.07 is also higher for 2008 earnings regressed on 2007 earnings.

The earnings persistence for benchmark beaters again indicates a strong relation for 2009 earnings regressed on 2008 earnings. A beta of 0.88 indicates high earnings persistence and a p-value of 0.00 confirms the significant relation between earnings for 2008 and 2009. The adjusted R-square of 0.52 shows earnings reported in 2008 explains more than half the variance in earnings in 2009.

**Table 9: Earnings Persistence Measures – Other Firms**

<b>Year</b>	<b>N</b>	<b>Beta</b>	<b>R Squared</b>	<b>p-value</b>
2006/2007	1111	0.58	0.414	0.00
2007/2008	1135	0.28	0.117	0.00
2008/2009	1145	0.77	0.228	0.00

Includes all ASX listed firms during 2007 excluding Benchmark Beaters in 2007

For each regression, censored dependant variables that were unreasonable values

1111 ASX listed Firms

Results from ordinary least squares regression of future earnings on current earnings for other firms group for the period from 2006 to 2009.

Table 9 outlines the earnings persistence results for other firms from 2006 to 2009. In comparison to benchmark beaters, the other firms group shows a clear relation between 2007 earnings regressed on 2006 earnings. A coefficient of 0.58 indicates high earnings persistence for other firms and this relationship is significant at 0.00. An adjusted R-square of 0.41

indicates earnings for 2007 are an important explanatory variable for earnings reported in 2006. This is in contrast to the benchmark beating group which indicated almost no relation for 2007 earnings regressed on 2006 earnings.

Although other firm's earnings persistence falls from 2007 to 2008, it continues to show a clear relation between earnings for the prior year and contemporary year. Earnings for 2008 regressed on 2007 show a significant relationship with a p-value of 0.00 and a coefficient of 0.28. Additionally, earnings for 2007 are an explanatory factor for 2008 earnings with an adjusted R-square of 0.12. Lastly, earnings persistence tests for other firms for 2008/2009 indicate high earnings persistence with a beta of 0.77 and a p-value of 0.00. An adjusted R-square of 0.23 confirms the explanatory component of 2008 earnings to predict the variance of 2009 earnings for other firms.

The earnings persistence regressions were also completed with a sub-sample of firms that were listed from 2006 to 2009. That is, regressions were completed with survivorship bias to confirm the initial earnings persistence results. The results reported in Table 8 and Table 9 were qualitatively the same when earnings persistence tests were limited to firms that were listed from 2006 to 2009.

Overall, regressions of subsequent year earnings on current year earnings for other firms have indicated a significant relationship for each test period evaluated. Interestingly, the benchmark beaters indicated a strong relation between prior year earnings and current year earnings for each period tested excluding 2007 earnings regressed on 2006 earnings. This result is important given that the expected period of earnings management is 2007. These results highlight that earnings for benchmark beaters in 2006 are not indicative of earnings for benchmark beaters in

2007. Furthermore, when 2008 earnings are regressed on 2007 earnings for benchmark beaters there is an increase in the earnings persistence compared to the 2006/2007 period. This is in direct contrast to the other firms group which reports a decline in earnings persistence for 2007/2008, compared to the 2006/2007 period.

If losses are more timely, earnings persistence is expected to be low (Basu, 1997). However, the earnings persistence of benchmark beaters increases when the market is reporting a fall in mean EBIT for 2008, compared to 2007. Based on these earnings persistence tests, the lower earnings persistence reported by benchmark beaters in 2007 and lack of relation to prior year earnings tends to suggest evidence of earnings management by benchmark beaters. Additionally, the low earnings persistence reported for benchmark beaters during the 2006/2007 period is a unique occurrence for the period tested from 2006 to 2009. The benchmark beaters demonstrate increased earnings persistence for periods 2007/2008 and 2008/2009.

Additional analysis was completed based on the entire sample of ASX listed firms for 2006 and 2007. This additional test is completed to confirm the difference between earnings persistence for benchmark beaters and other firms. A dummy variable representing benchmark beaters for 2007 is introduced in to the earnings regression to gauge whether benchmark beaters are significant when regressions are conducted for 2007 earnings on 2006 earnings. Similarly, earnings is proxied by EBIT for this additional test.



The earnings persistence model is displayed in equation 11.

$$Earnings_{t+1} = \alpha_0 + \alpha_1 Earnings_t + BB_t + v_{t+1} \quad (12)$$

Where:

*Earnings<sub>t+1</sub>* is EBIT / average total assets for t+1

*Earnings<sub>t</sub>* is EBIT / average total assets for t

*BB<sub>t</sub>* is benchmark beaters for t

**Table 10: Earnings Persistence – Benchmark Beaters and Other Firms**

<b>Year</b>	<b>N</b>	<b>Beta</b>	<b>t-statistic</b>	<b>p-value</b>
BB <sub>t</sub>	81	-0.15	-1.77	0.08
EBIT06	1183	0.74	20.13	0.00

Small Positive EPS group for 2007 – Benchmark Beaters

Australian firms reporting Basic EPS < 0 cents per share - ≤ 1 cent per share in 2007

Number of firms is 1183, denoted by all firms

Benchmark beaters include 81 firms

Table 10 shows that the dummy variable for benchmark beaters is marginally significant when regressions are conducted for 2007 earnings on 2006 earnings. This again provides some support to suggest that benchmark beating firms are reporting marginally different earnings persistence for the 2006 and 2007 period.

Earnings persistence was tested for benchmark beaters against other firms to confirm the validity of the previous finding in this study, which identified evidence that firms reporting a small positive EPS result are more likely to manage their earnings. Earnings persistence was found to be significantly less for benchmark beaters compared to other firms in 2007. This finding is noteworthy given that 2007 is the predicted year of earnings management. The lack of relationship between earnings for 2006 and 2007 for benchmark beaters indicates further support for benchmark beaters managing their earnings to report a small positive Basic EPS.

Additionally, earnings for benchmark beaters in 2007 were the only period of earnings tested which did not have a significant relationship with the prior year's earnings.

## Chapter 5 Conclusion

This study conducted multiple approaches to identify earnings management within the Australian market. Companies with small positive earnings and positive earnings changes were assumed to be managing their earnings. Versions of the Dechow *et al.* (2002) accrual quality model, Jones earnings management model (1991, 1995) and earnings persistence measures were applied to identify whether companies with small positive earnings and positive earnings changes managed their earnings.

Examination of the distribution of firms around the earnings benchmarks did not reveal a discontinuity at zero for small positive earnings and positive earnings changes with EPS and NPAT used as measures of earnings. This was confirmed by histograms suggesting approximately a normal distribution for small positive earnings and small positive earnings changes. Further tests were conducted to determine whether alternative specifications of benchmark beaters reveal earnings management. To this end, accrual based models were used to test whether benchmark beaters have higher discretionary accruals compared to all other firms and just miss firms. Examination of the positive earnings benchmark using NPAT did not indicate higher discretionary earnings for benchmark beaters compared to just miss firms or other firms. Additionally, discretionary earnings were not found to be significantly different for benchmark beaters based on small positive NPAT earnings changes from the prior year, when compared to just miss firms and other firms. This indicates that Australian listed firms do not manage their earnings based on NPAT, or versions of the Dechow *et al.* (2002) model lack the power to detect the earnings management.

Additional testing using Basic EPS as the earnings metric (as opposed to NPAT) was conducted to compare benchmark beaters, just miss firms and other firms. It was found that benchmark beaters reporting a small positive Basic EPS ( $< 0$  cents per share -  $\leq 1$  cent per share) have significantly higher discretionary earnings compared to other firms applying the Francis *et al.* (2005) version of the Dechow *et al.* (2002) model. However, additional testing using Basic EPS indicated similar accruals quality for benchmark beaters and just miss firms. No evidence was identified to suggest that firms manage their earnings to report a small positive earnings change using Basic EPS or NPAT.

Finally, additional testing was completed using earnings persistence to substantiate evidence and to reconcile the conflicting results reported by the accrual based models. Earnings persistence tests completed provided further support to suggest that benchmark beaters reporting a small positive Basic EPS result are earnings managers. Earnings persistence tests for benchmark beaters (small positive Basic EPS) identified low earnings persistence in the 2006/2007 period, with a coefficient of 0.01. This low earnings persistence reported by benchmark beaters in the 2006/2007 period was important given that 2007 was the predicted year of earnings management. Furthermore, the earnings persistence of the benchmark beaters increased considerably in subsequent periods after the predicted year of earnings management.

This study has provided a further assessment of the degree of earnings management around positive earnings and positive earnings change benchmarks. There still exists considerable scope within the earnings management literature to better identify and quantify earnings management around earnings benchmarks. Studies within Australia have yet to provide consistent evidence of the level of earnings management occurring around positive earnings and positive earnings change benchmarks. Explicit rewards for management will continue to

provide incentives for managers to achieve earnings benchmarks. Gains in earnings management research have the ability to reduce the impact of earnings management around benchmarks and ensure that companies are reporting a true representation of their financial position.

This study has been limited to the Australian market and could be extended to other countries. Useful comparisons could be made with results from jurisdictions where the motivation and opportunity for benchmark beating is different. Additional evidence from other jurisdictions would be useful to corroborate the findings of this study. The limited time frame examined also reduces the generalizability of the results reported. Additional periods should be evaluated in future research to determine whether the results are time specific. Assessing a longer time period could provide evidence as to whether earnings management is declining, static or becoming more prevalent. Overall, this study indicates that a positive earnings benchmark (Basic EPS) is a better indicator of earnings management than positive earnings changes. Further research in to the positive earnings benchmark could yield more substantial evidence regarding whether Australian firms on average manipulate their earnings to report positive earnings.

While this study evaluated the distributions of firms earnings based on a fiscal year, there are further research opportunities in the Australian market based on a distribution of earnings approach. Studies in the U.S have used interim reports as opposed to fiscal year reports in an attempt to characterise the distribution of earnings. Other research opportunities include evaluating the increased power of the Dechow *et al.* (2011) model in the Australian context to earnings management studies. This model has shown increased power to detect earnings management to alternative models and could assist auditors, regulators and researchers identify

companies managing their earnings. Australian researchers are in a unique position to use versions of the Dechow *et al.* (2002, 2011) models because prior, current and subsequent operating cash flows can be obtained directly from cash flow statements for Australian firms from 1992 to January, 2009.

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