

**CREATIVE ACCOUNTING: AN
EMPIRICAL EXAMINATION**

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ABSTRACT

CREATIVE ACCOUNTING: AN EMPIRICAL EXAMINATION

“Australian firms, already strong practitioners of creative accounting, are jumping on the bandwagon [of a change to an IASB standard allowing firms flexibility to amortise assets]” – Paul Kerin (The Australian, 13 April 2009). A search of articles in the Australian news media specifically using the words “creative accounting” reveals widespread use of this term. The world economic crisis of 2008 and 2009 has again placed a spotlight on financial reports of public companies and the accounting standards from which the reports are derived.

Despite some studies having suggested that investors are not fooled by creative accounting practices (that investors somehow see through accounting techniques and adjust for differences (Dharan and Lev 1993 p493), it seems clear that the market has been fooled by financial reports which did not reflect the real-world phenomena, at least anecdotally (Sterling and Harrison 1974 p147).

The accounting profession has a special franchise granted to it by the community, to appraise the value and legitimacy of end-of-year financial reports (Briloff 2002 p1). Some suggest creative accounting conjures perceptions of financial permissiveness, and the continued presence of creative accounting practices evidenced through autopsies of corporate failures is associated with a crisis of confidence in the Australian accounting profession (Clarke et al. 2003 pp29-30).

There has been limited empirical work identifying creative accounting in Australia (Healy and Wahlen 1999). A central thesis of this dissertation is to ascertain empirically the extent creative accounting may be present in financial statements of Australian companies from 1998 to 2004.

Three tests were utilised to obtain evidence which may be consistent with the potential presence of creative accounting: a histogram analysis (Holland and Ramsey 2003), a regression analysis based on the Jones (1991) model and a gamma regression model (developed within) with supporting company case studies. An initial sample comprised 71 firms (497 firm years) who were listed as top 200 Australia companies continuously in each of the seven years of the sample period. The financial sector has been included within this dissertation, in contrast to other Australian studies where this sector has been specifically excluded.

The findings of this dissertation provide evidence that certain Australian ASX 200 companies' financial reports are likely to contain creative accounting. The histogram analysis of the reported profits provides the strongest evidence that creative accounting is within the financial reports of certain sample companies, whilst the Jones (1991) regression analysis proves to be a weak indicator of creative accounting within the sample companies. An explorative model was developed and identified the financial reports of three companies which exhibited likely signals of creative accounting.

CERTIFICATION

I hereby certify that this thesis is original and does not contain without acknowledgement any material previously published or material which to a substantial extent has been accepted for the award of any other degree or diploma of a university or other institute of higher learning.

A handwritten signature in black ink, consisting of a series of connected loops and strokes, representing the name Stephen Max Crouch.

Stephen Max Crouch

March 2010

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To my patient, but much loved Ethan, Stevie and Mercedes.

To Donna - generous, gracious and gorgeous.

INTRODUCTION

1.1 Introduction

“Australian firms, already strong practitioners of creative accounting, are jumping on the bandwagon [of a change to an IASB standard allowing firms flexibility to amortise assets]” – Paul Kerin (The Australian, 13 April 2009). A search of articles in the Australian news media specifically using the words “creative accounting” reveals widespread use of this term. The world economic crisis has again placed a spotlight on financial reports of public companies and the accounting standards from which the reports are derived.

1.2 Annual Reports under Examination

The annual financial report is a key accountability document to stakeholders (Lang and Lundholm 1993). It is the centrepiece of financial reporting. The production of financial reports in Australia is based on relevant accounting standards and generally accepted accounting principles. Accrual accounting and accrual reporting are regarded as superior measures of a firm’s performance when, on average, accruals have incremental information content over cash flow reporting (Dechow and Skinner 2000 p237). The use of discretionary accruals by managers of firms dampens the oscillating nature of a firm’s underlying cash flow and may provide more useful information to investors and other users of financial reports (Subramanyam 1996 p259; Dechow and Skinner 2000 p239).

It may be that “too much” smoothing is now a pervasive issue in financial reports, where aggressive smoothing is generated by financial statement preparers manipulating discretionary

accruals (Dechow and Skinner 2000 p238). Smoothing is the practice whereby the volatility of periodic earnings fluctuations is deliberately reduced by utilising discretions and methods available within accounting principles (Hepworth 1953; Copeland 1968). Creative accounting may result from the adoption of various techniques and methods utilised by managers of firms such as accruals, changes in accounting methods and changes in capital structure (Jones 1991 p206).

Creative accounting is also referred to as income smoothing, earnings management, financial engineering and cosmetic accounting (Amat and Gowthorpe 2000 p4). Earnings management is the pervasive title used by researchers in the United States and Creative Accounting is the term frequently used by European researchers (Tweedie and Whittington 1990; De La Torre 2009).

A common misperception is that creative accounting and fraud are the synonymous. There is a clear distinction between creative accounting and fraud in financial reports. Fraud involves producing financial reports based on fictitious transactions, while creative accounting does not. Creative accounting occurs when actual transactions or events are manipulated or misrepresented (Dechow and Skinner 2000 p247).

1.2.1 Contribution to Public Practice

It is apparent, at least anecdotally, that the market has been fooled by financial reports which did not reflect real-world phenomena (Sterling and Harrison 1974 p147). Despite this, some studies have suggested that investors are not fooled by creative accounting practices, and that investors somehow see through accounting techniques and adjust for differences (Dharan and Lev 1993 p493).

There is currently an international focus directed at building a consistent framework that will facilitate the production of better quality standards for financial reporting and, consequently, enhance the usefulness of financial reports (Clark 2009 p1). This dissertation focuses on making a

contribution to public practice through reviewing and developing methods which may assist in identifying the potential presence of creative accounting in Australian financial statements, an area acknowledged as requiring further academic research (Healy and Wahlen 1999).

1.2.2 Building Knowledge About Creative Accounting

There has been limited empirical work on creative accounting in Australia. At the time of writing nine principal studies were identified: those of Craig and Walsh (1989), Godfrey and Jones (1999), Wells (2002), Koh (2003), Holland and Ramsey (2003), Hsu and Koh (2005), Coulton et al. (2005), Davidson et al. (2005) and Herbohn and Rangunathan (2008).

The place of this dissertation within the research is to be a building block on these studies in three ways: updating empirical analysis to include 2004 data (previous studies included data up to 2003), developing a model which may assist in identifying the potential presence of creative accounting in financial statements and identifying firms who may have adopted creative accounting methods through three firm-specific case studies.

1.3 Motivation for the Study

The accounting profession has a special franchise granted to it by the community: to appraise the value and legitimacy of end-of-year financial reports (Briloff 2002 p1). Further, the community grants a public privilege in the form of limited liability to most corporate form entities and some have argued there is a trade-off between the public privilege of limited liability and financial disclosure to the public who afforded that privilege (Parker 1990).

Corporate collapses across time have led some to conclude the accounting profession has not discharged its responsibilities adequately when it comes to the contents of financial reports (Spacek 1964 p19; Briloff 1984, p510; Tweedie and Whittington 1990 p97; Ball 2008 p428).

Regulators have stepped in to protect public safety or the public interest by setting out rules for disclosure (Benston 1973), regulation deemed necessary because of the perceived weakness in voluntary disclosure (Dubis and Neimark 1982). Others have suggested a possible failure of some of the underlying mandatory disclosure rules (Carlin and Finch 2008).

The last 10 years have also been marked by corporate failure, for example, HIH Insurance (Australia's largest corporate collapse), OneTel, Ansett Australia and Centaur Mining (Carlon et al. 2003 p36; Clarke et al. 2003; Clarke 2004 p160; Cooper et al. 2005 p156). More recently, as the global economic crisis from 2007 has developed there have been more corporate casualties in the financial sector: Allco, BridgeCorp, FinCorp, Babcock and Brown are examples. The continued corporate collapse and distress of major Australian companies has caused some to suggest the Australian corporate sector is characterised by "a recurring cycle of regulatory failure and regulatory reform" (Cooper et al. 2005 p156).

Creative accounting conjures perceptions of financial permissiveness, and the continued presence of creative accounting practices evidenced through autopsies of corporate failures is associated with a crisis of confidence in the Australian accounting profession (Clarke et al. 2003 pp29–30; Jackling et al. 2007 p937).

1.4 Objective of the Study

A central thesis of this dissertation is to ascertain empirically the extent to which creative accounting may be present in financial statements of Australian companies from 1998 to 2004. Creative accounting is a fertile area requiring further academic research (Healy and Wahlen 1999).

There is an argument that accounting standards should be improved to increase transparency of financial reports (which include the profit and loss statement, balance sheet and the statement of

cash flows plus notes) to enable the reader to identify firms using creative accounting techniques (Breton and Taffler 1995). Changes to Australian accounting standards have often been triggered by scandal, system failure, royal commissions and the like (more recently exemplified by the Royal Commission into the HIH collapse and consequent changes to the corporate law economic reform program, CLERP 9) (Jones et al. 2004 p385). This dissertation seeks to assist the work of standard setters through conducting specific company case studies and ascertaining the persistence of creative accounting in some of Australia's largest companies over the research period.

1.5 Overview of this Research

Differences between profit and cash from operations, or more generally between accrual accounting and a company's cash flow, are expected, indeed conventional (Surbramanyam 1996 p250). Accrual accounting methods and standards assist companies to adjust for legitimate timing differences in an accounting period to improve comparability, helping to match expenses against income (Dechow and Skinner 2000 p239).

Timing differences are also a function of accounting standards, defining the difference between the net profit after tax (NPAT) within financial statements and cash flows. Timing differences¹ between the NPAT within financial statements and cash flows should approach zero over the long term (Holland and Ramsey 2003 p59). The relationship between NPAT and cash flows is significant when identifying and measuring the accrual activity of the firm (Hribar and Nichols 2007 p1019). Creative accounting cannot generate cash flows and firms are unlikely to use the timing of actual cash flows to manage earnings (Mulford and Comiskey 2002 p370; Holland and Ramsay 2003 p59).

¹ Some of which are created by accounting standards, for example, differences created by AASB 117 – Leases. A finance lease has certain cash flow obligations paid by a company to a financier. AASB117 requires the asset to be recorded in the accounts of the company along with a loan amount. The impairment of the asset by way of a depreciation charge and the interest on the booked loan which are both recorded as expenses are unlikely to be the same as the payments in any one year, but over the life of the asset these will be identical.

A financial report may contain the use of one creative accounting technique, or a concert of creative accounting techniques that produce a desired result. The difficulty with tracking one variable to measure one creative accounting technique is a practical one. The firm which desires to manipulate the performance ostensibly may do so using any or all of a wide array of its available creative techniques. Firms may use a particular technique being investigated in one year, but not use that technique in future years, preferring other methods available. Therefore, testing for the existence of a single or defined set of creative accounting techniques may not facilitate the capacity to determine the existence of creative accounting in financial reports. Notwithstanding these reservations, a research model focusing on the sum of the accruals (a total accruals approach) should facilitate the capture of a larger portion of manager manipulations (Jones 1991 p206).

This dissertation is grounded in a survey of the theoretical and empirical literature identifying creative accounting through the discretionary portion of total accruals. A number of Australian studies utilise this method, including those of Coulton et al. (2005), Davidson et al. (2005), Hsu and Koh (2005) and Herbohn and Rangunathan (2007).

1.5.1 Sample Selection

Like the other prior studies drawing upon Australian datasets, this study captures firm years over an extended seven-year period, 1998 to 2004. The difference between other studies and this research is that the 71 sample companies are represented in each year over the seven-year period. Previous empirical studies with data covering more than one year focused on the cross-sectional differences generated by firms' years, where firms selected for one year were not necessarily selected for the other years of the sample.

The longitudinal nature of the sample (seven years) differentiates this dissertation from other studies, yet it is still grounded in a robust cross-sectional examination of the samples' firm years.

1.5.2 Data Collection

A sample of 497 firm years (represented by 71 companies) was selected from a population of 1,613 firm years (552 eligible companies) across a seven-year period (1998 to 2004). The financial data collected for use in the research model were gathered from two sources:

1. Hard copy Annual Reports produced by the company: 497 published accounts were downloaded and a hard copy printed for the sample companies across the seven years.
2. The Aspect Database ².

The data collected from the two sources were compared and verified.

1.6 Testing for Creative Accounting

This investigation into creative accounting in Australia comprised three phases.

1. An analysis of the distribution of reported earnings across the 497 firm years sought to identify initial evidence suggesting creative accounting may be used by the sample firms to report positive profits (Holland and Ramsey 2003 p53; Coulton et al. 2005 p559). Utilising a histogram, a cross-sectional view of the reported net profit after tax was obtained. Creative accounting may be suggested when a discontinuity of the distribution occurs at zero. That is, firms with small losses up to zero may be prone to adopting creative accounting methods to take their profit from a small negative result to a positive profit result (Burgstahler and Dichev 1997; Holland and Ramsey 2003 p53; Coulton et al. 2005 p559).

² A database of annual reports of all ASX listed and de-listed companies integrated in one continually updated database. A Macquarie University subscription, the Aspect database is a research tool providing access to Australian companies' annual reports dating back to 1995. Aspect is a product of Huntleys' Investment Information Pty. Limited (HII) (a wholly owned subsidiary of Morningstar, Inc.), 2010. All rights reserved. Australian Financial Services Licence no. 240892)

2. Utilising a model developed by Jones (1991) to identify abnormal or unexpected accruals in the dataset was another approach to determine the level of creative accounting or earnings management (Coulton et al. 2005 p561; Davidson et al. 2005 p250; Hsu and Koh 2005; Hribar and Nichols 2007 p1020). The 497 firm years were modelled within a time-series regression to estimate an expected or normal level of accruals, while the residuals from the model measured the abnormal or unexpected discretionary accruals (Hribar and Nichols 2007 p1020).
3. Findings from a gamma regression model developed within this dissertation helped identify possible abnormal or unexpected discretionary accruals utilising the definition of an absolute accruals measure provided by Hribar and Collins (2002). TACC (total accrual adjustments) is defined as the difference between net profit after tax (NPAT) and cash flow from operations (OpCash). The predictive capability of the model was assessed through three company-specific case studies utilising content analysis of the firms' financial reports to corroborate any potential presence of creative accounting.

1.7 Creative Accounting Support

Though the study of creative accounting may vary greatly and be linked with both positive accounting theory and critical-historical theory, there remain strong and persistent motivations for the phenomenon of creative accounting. Thereby, the exploratory study of creative accounting proposed in this dissertation may assist to increase the understanding of this phenomenon through developing a model which may assist in identifying the potential presence of creative accounting in financial statements and identifying firms who may have adopted creative accounting methods through three firm-specific case studies (as well as updating empirical analysis to include 2004 data (previous studies included data up to 2003).

The focus of this dissertation is on total accruals as the source of creative accounting. More specifically, this study utilised unexpected changes to total accruals of a firm as a signal that managers of firms may have manipulated discretionary accruals in order to manage earnings (Jones 1991 p206). Jones (1991) provided a definition of creative accounting as “an incidence of unexpected accruals” and, correspondingly, that the total unexpected accruals can be measured.

This dissertation includes data from the finance industry, not yet included in the empirical creative accounting literature in Australia (Wells 2002 p175; Koh 2003 p116; Holland 2003 p50; Coulton 2005 p558; Davidson et al. 2007 p249; Herbohn and Ragunathan 2008 p581). Previous studies have not focused on the finance industry because of its low level of property, plant and equipment (PPE), whereas PPE has been an important control variable in the models based on Jones (1991). A robust gamma model developed within this dissertation provides a variation on Jones’s (1991) modelling which facilitates the inclusion of the financial sector.

The findings of this dissertation provide possible evidence about creative accounting within the Australian ASX 200 company financial reports. Histogram analysis of the reported profits provides evidence that certain sample companies were likely to be engaged in creative accounting activity as identified by a discontinuity at zero (within the Histogram). Whilst, as expected, most companies reported a positive net profit after tax (76% of the sample), there were greater number of firms achieving a small positive net profit after tax (143 firm years in the first interval after zero) than a small negative net profit after tax or loss (34 firm years in the first interval before zero). The discontinuity at zero is in line with similar studies, confirming that firms within the sample are likely to be engaged in creative accounting activity (Burgstahler and Dichev 1997; Holland and Ramsey 2003; Coulton et al. 2005). This inconsistency or discontinuity at the first interval (+ or – zero) is also evidence consistent with benchmark beating, where possible creative accounting

(earnings management) is detected by observing a greater frequency of observations immediately to the right of the relevant earnings benchmark (Holland and Ramsey 2003; Coulton et al. 2005 p574).

A four-step process was applied to the sample data to assist identify likely users of creative accounting. First, a gamma model was developed to generate 95% confidence intervals within which reported net profit after tax is expected for each “super” industry grouping. Second, outlier companies were identified for further analysis. At this stage, three companies were identified for further analysis: Woodside Petroleum, the National Australia Bank and News Corporation. These companies were not the only outliers identified, but each had more than one year as an outlier within the sample years 1998–2004.

Third, a line of best fit was applied to the net profit after tax (NPAT plotted by year, 1998–2004), for each company selected for case analysis. All three companies showed some signs of positive linearity, which is consistent with the potential presence of creative accounting.

Finally, a content analysis for the relevant years’ financial reports was undertaken for each company selected for case analysis. The content analysis provided some supportive corroborating evidence which may have led the companies to engage in creative accounting.

This dissertation goes some way to identifying the likelihood of creative accounting in the financial reports of public companies in Australia. It does not illuminate or demonstrate the specific creative accounting techniques that may have been used in the sample companies. Perhaps qualitative methods, interviewing managers and account preparers for example, may assist future studies to identifying the specific creative accounting techniques and methods contained in the financial reports of Australian public companies.

1.8 Chapter Summary

A summary of the research objectives of this chapter and the related outcomes is provided in Table 1 below.

Table 1 Chapter 1 Summary

Introduces the construct of Creative Accounting	Section 1.2 initially defines the problem of Creative Accounting in the context of the financial Reporting environment, identifying that there is place of this research in the literature and public practice.
Outlines the motivation and objective of this research.	Section 1.3 and 1.4 sets out a central thesis of this dissertation to ascertain empirically the extent creative accounting may be present in financial statements of Australian companies from 1998 to 2004
Provides an overview of the data collection process.	Section 1.5 identifies the composition of the sample of 497 firm years
Previews the development of the research model.	Sections 1.6 and 1.7 give a brief commentary on the model development process and summarise the research proposition.

The next chapter will survey and review the construct of creative accounting in the literature to identify the place in the literature for this study.

LITERATURE REVIEW

2.1 Introduction

This chapter reviews the literature on the development of financial reporting and the evidence identifying creative accounting. The financial reporting requirement, for the purpose of this dissertation, is captured neatly within the end-of-financial-year reports produced by Australian public companies.

The financial reporting requirements have evolved over a period of time (and extend beyond end-of-year financial reports). The literature reviewed here has four principal intentions:

1. Define financial reporting for public companies in Australia and review the “what”, “why”, “who” and “where” of financial reporting. That is, what are the objectives of financial reports, why are they produced, who are they produced by and for whom, and where are they most useful?
2. Provide a synopsis for the evolution of financial reporting for public companies in Australia. The development of the financial reporting requirements is revisited in the literature against waves of exogenous shocks to financial markets, including significant economic recessions (Ball 2008; Lowe et al. 2008), stock exchange crises and rules changes (Hawkins 1963; Hein 1963) and regulator responses to these events (Parker 1990; Cornehls 2005).

3. Define creative accounting, within the context of available literature. Provide examples of creative accounting techniques and a brief insight into the motivation of managers engaging creative accounting.
4. Provide a synopsis of the literature investigating creative accounting and creative accounting techniques both in Australia and internationally. In respect of the Australian literature, a brief synopsis of each work identifying creative accounting in the financial reporting requirements of public companies is provided.

A special franchise has been granted to the accounting profession to appraise the value and legitimacy of end-of-year financial reports (Briloff 2002 p1). Australian corporations law (Corporation Act 2001) requires all public companies to obtain a compulsory audit certificate for their annual financial statements. Auditors are required to be registered under section 1280 of the Corporations Act 2001 and a registration prerequisite is for each auditor to have accounting knowledge and experience.

Corporate collapses across time have led some to conclude that the accounting profession has not discharged its responsibilities adequately when it comes to the contents of financial reports (Spacek 1964 p19; Briloff 1984, p510; Tweedie and Whittington 1990 p97; Ball 2008 p428).

Regulators have stepped in to protect public safety or the public interest by setting out rules for disclosure (Benston 1973); regulation has been deemed necessary because of the perceived weakness in voluntary disclosure (Dubis and Neimark 1982). Others have suggested a possible failure of some of the underlying mandatory disclosure rules (Carlin and Finch 2008).

Notwithstanding that regulations have forced change to financial disclosures, it has been argued that “creative” accounting practices and methods continue to represent a systemic element of the

financial reporting landscape (Merchant and Rockness 1994 p79; Healy and Wahlen 1999; Amat and Gowthorpe 2000; Herbohn and Ragunathan 2008).

2.2 Financial Reporting

The first intention of this literature review is to set out the financial reporting requirement. This section of the dissertation reviews the “what”, “why”, “who” and “where” of financial reports. The objectives of financial reports are established in the literature, then the reasons for their production are set out. The relevance of this dissertation is inextricably linked to the important place financial statements have in the Australian (and global) business setting. Examining the definition(s) for financial reports along with a review of the objectives of financial reporting may assist to place to the problem of creative accounting into an environment which regulators face (Chambers 1989 p18).

Identifying users of financial reports, and identifying the circumstances in which users utilise financial reports, may assist an analysis of the effect of creative accounting on said users.

2.2.1 Defining Financial Reports

Currently, financial reports issued by Australian Public companies are referred to as general purpose financial reports (AASB101 2009). Issuing general purpose financial reports to the market, which have been subject to an audit, satisfies the primary reporting obligation for public companies under the Australian Corporations Act 2001.

The annual report is a key accountability document to stakeholders (Lang and Lundholm 1993). It is the centrepiece of financial reporting (Briloff 1984 p475). Within the annual report are the balance sheet, income statement, cash flow statement and notes, which together form the

fundamental financial statements (AASB101 2009). In Australia the current Statement of Accounting Concept No.1 defines general purpose financial reports as: ³

“General purpose financial report” means a financial report intended to meet the information needs common to users who are unable to command the preparation of reports tailored so as to satisfy, specifically, all of their information needs. Statement of Accounting Concept No.1 (paragraph 6)

Financial reports are produced by Australian public companies for two key reasons. First, Australian law (AASB 101) and international accounting standards (IAS1) require public companies to provide financial statements that present fairly the financial position (balance sheet), financial performance (profit and loss summary) and cash flows of the company (AASB101 paragraph. 15). Notes to financial statements explain various elements set out in the balance sheet, profit and loss or cash flow. These reports and statements are packaged together and issued to shareholders and made available for public inspection or distribution (Chambers 1989 p18).

Second, verification of privately acquired information is a key function of financial reports (Sterling 1984 p242). Australian public companies do provide other financial information and reports to specific users (Whitred and Zimmer 1984 p288).

Stakeholders often require a listed company to provide tailored reports that are suited to their needs (Jensen and Meckling 1976). Information that is tailored to one stakeholder is not generally made available to the other stakeholders. These specific or tailored reports are not generally publicly available information in the same way that the audited general purpose accounts are made available to the public by law.

³ The adoption of the Australian standard equivalents of the International Accounting Standards Board (IASB) standards for years ending after 1 July 2005 has led to some questioning the relevance of the Statement of Accounting Concepts (Clarke et al. 2003 p328). The Australian Accounting Standards Board noted that it is necessary to adopt the IASB Framework, the International Boards accounting framework, which is less comprehensive than the guidance set out in the Statement of Accounting Concepts (SACs) (Clark 2008 p3).

A bank, for example, may require a public company to provide a projected cash flow forecast for the next 12 months. This report is tailored to the financier's need to know the company's planned inflows and outgoings in advance, to ensure that principal and interest repayments have been scheduled in full and on time. The cash flow forecast contains sensitive information about the plans, costings and strategies the firm plans to implement over the next year. A detailed cash flow forecast provided to the bank may be not made available publicly so as to eliminate the possibility of giving away any competitive advantage to the firm's competitors.

Notwithstanding that a financier or bank may obtain a cash flow forecast, they will still have a need to obtain the general purpose financial reports provided by the company, if only for verification purposes (Hines 1982 p307).

Other comments about financial statements found in the literature which lead into the next section about the objectives of financial reports include:

- Financial statements should reflect the economic opportunities of the firm and an estimation of future opportunities for the firm (Tweedie and Whittington 1990).
- The accounting numbers in financial reports should reflect real-world phenomena about the firm, providing explanations to the reader (Sterling and Harrison 1974 p147; Sterling 1975 p29).
- Financial reporting practice is influenced by the various *uses* to which financial reporting is subject, not necessarily reflecting the accounting standards set out by regulation (Ball 2008 p428).

2.2.2 The Objective of Financial Reports

According to Australian law, the objective for financial reports “is to provide information about the financial position, financial performance and cash flows of an entity that is useful to a wide range of users in making economic decisions. Financial statements also show the results of the management's stewardship of the resources entrusted to it” (AASB101 paragraph 9).

In Australia, Barton (1982) confirms a “decision usefulness” purpose for financial reports when he states:

“To satisfy the needs of users for financial information on the economic affairs of a firm. Users require financial information about the firm's operations and its resources and obligations for use in economic decision making and control and for accountability purposes” (Barton 1982 p7).

Henderson and Pierson (1984) suggest the objective for financial reporting may have three components: the concept of stewardship, the requirement for control and the obligation of decision usefulness.

Stewardship is founded on a historical perspective highlighting the traditional use of accounting techniques applied by a manager to report back to an owner (Chambers 1964 p270). The concept of stewardship is not limited to keeping property safe or protecting property against danger; it also involves reporting on progress made in developing the property or showing a return on the property to an owner (Clarkeson 1995 p107).

The requirement of control places financial reports at the heart of the firm and has an application at two levels. In the first instance control is important to the manager. Managers rely on accounting information to control and organise the firm. The principle that “information that is not reported is not managed” is one understood by managers (Petty 2004). In the second instance, owners are better able to evaluate the decisions of managers with the knowledge gained

from financial reports based on accounting information that managers use to control the firm (Sterling 1985 p242; Chambers 1998 p46).

A third component to the accounting objective is decision usefulness. The underlying assumption for accounting information is that people use accounting reports for making decisions (Randerson 2004 p50; Barth 2007 p9). The people who use accounting reports, “the users”, are a disparate group of stakeholders (Sterling 1985 p243). Financial reports are to assist users make economic decisions about the firm (Deegan 2000). That is, financial reports should be useful to users when they make rational investment choices (Randerson 2004 p50), credit assessments and decisions bearing on the allocation of scarce resources regarding the firm.

The objectives listed above are consistent with the accounting framework developed in Australia and internationally. A more recent objective of financial reporting put forward by Gray et al. (1996) is accountability (Stanton 1996 p686). Accountability is defined as “the duty to provide an account or reckoning of those actions for which one is held responsible” (Gray et al. 1996 p38).

Interestingly, accountability can be applied in the broadest sense, as a responsibility to society at large. In this application a set of users are not specifically identified and the costs of producing the reports relative to the benefit achieved by users of the reports is not identified (Spacek 1964).

2.2.3 The Qualitative Components of Financial Reports

Financial reports are a result of the accounting process maintained by the firm. The firm’s accounting system involves identifying, collecting and processing every financial transaction undertaken by the firm. The accounting process applies accounting conventions and accounting standards to each of the underlying transactions. Accounting conventions are the building blocks of the accounting information system and best practice financial reporting (Briloff 1972 p34).

The information technology (IT) concept of GIGO (garbage in, garbage out) has a real application to financial reports based on accounting information. With this approach, accounting information based on unreliable estimates, incomplete measurements or fictitious transactions will lead to irrelevant, unreliable and incomplete financial statements. It is apparent that over a sustained period there have been instances where market participants have been fooled by financial reports which did not reflect real-world phenomena (Sterling and Harrison 1974 p147; Chambers 1999).

Accounting conventions, qualities expected to be reflected in financial reports, have been developed by the accounting profession (Barton 1982 p3). Australia's programme of harmonising International Accounting Standards (IAS) has with it an embedded adoption of the IAS framework (Clark 2008 p1).

The International Standards Board and the Financial Accounting Standards Board (US) are collectively working on a conceptual framework to eliminate conflicts and inconsistencies within their respective models. The boards jointly believe a consistent framework will facilitate the production of better quality standards for financial reporting and enhance the usefulness of financial reports (Clark 2009 p1).

A selection of reporting qualities identified by the accounting profession and the development of accounting conventions since the 1960s is illustrated in Table 2.

Table 2 Accounting Convention Development

AAA US (1966)	Trueblood Committee US (1973)	FASB: Concepts No 1 US (1980)	ASRB Release 100 Aust (1990)	IASB IAS 8 Aust (2002)	Discussion Paper International (2009)
Relevant	Relevant	Relevance	Relevance	Relevance	Relevance
Verifiable	Reliable	Reliability	Reliability	Reliability	Reliability
		Faithful representation	Faithful representation	Faithful representation	Faithful representation
	Substance before form			Substance before form	
Free from Bias	Free from Bias	Neutrality	Objective	Neutrality	Neutrality
				Prudent	
				Complete	Complete
	Material	Materiality		Materiality	Materiality
Quantifiable					
	Comparable	Comparable	Comparable		Comparable
		Timeliness			
	Consistent				
	Understand- able				

(Henderson and Pierson 1984 p8 and p26; Sims and Cullis 1995 p177; Clark 2008 p2)

For financial reports to be **relevant**, the information contained within them needs to influence decision makers, or make a direct contribution to their decision-making process (Briloff 1972 p35). For example, financial reports would be relevant if they confirmed an investor's expectations, or if they corrected an analyst's rating. Reports are irrelevant if there is no new information contained within them. The quality of **materiality** introduces the idea that the costs of producing information for financial reports is relevant when considering the comparative benefit achieved when including that information in reports (Dechow and Sloan 1981).

Reliability is a quality which has a number of secondary components which have developed over time (Henderson and Pierson 1984 p 8 and p26). These components include the concept of **representational faithfulness**, identifying transactions and accounting elements for what they are, and not misrepresenting that true nature (Henderson and Pierson 1984 p 8 and p26). The

concept of **neutrality** relates to conditions where producers of financial reports do not influence the report in order to achieve their desired outcomes (Clark 2008 p2). **Completeness** is the quality that requires all transactions to be represented in contrast with selective inclusion or representation (Briloff 1972 p47).

Creative accounting, defined later in this dissertation, is arguably identified by the absence in financial reports of one or more of these qualities. In a similar vein it is arguable that standard setters have been guided by these accounting conventions to produce standards (Simms and Cullis 2001 p176), using these conventions to filter information contained in financial reports to help identify firms who may have adopted creative accounting or earnings management techniques.

2.2.4 Production of Financial Reports

Financial reports are produced by the firm for the stakeholders. More specifically, financial reports are produced by the managers of the firm for distribution to the stakeholders. The managers of the firm use financial reports as a report card on their stewardship of the firm (O'Connell 2007 p216). A report card provides an opportunity to the manager to summarise all of the financial transactions entered into by the firm for a given period.

The function of a firm producing financial reports has been the subject of much research. Two categories of thought have permeated accounting research for a generation (Shapiro 2006 p54). A cursory glance at the two categories may assist the subsequent discussion about the role a firm plays in producing financial reports and later, in the literature review, the role the same firm plays in utilising creative accounting techniques.

First is the critical-historical research perspective championed by Spacek (1963), Sterling (1975), Briloff (1984), Barton (1984), Shapiro (2006) and Cooper (2007), amongst others. The other category, known as positive accounting research, was promoted by Watts and Zimmerman (1978)

and is broadly consistent with themes and approaches adopted by Ball (2008), Demski (1973), Jensen and Meckling (1976), Revsine (1991) and Christensen (2002), amongst others. Both positive accounting analyses and critical-historical research review the behaviour of the participants in financial reporting, particularly the “manager” of the firm responsible for producing financial reports.

Perhaps because the critical-historical approach pre-exists positive research, proponents suggest critical-historical research provides a richer, deeper vocabulary to describe the social and moral components of human behaviour (Sterling 1990 p132; Shapiro 2006 p61). The development of a conceptual framework, for example, in Australia (Barton 1984) and the United States (Sterling 2003) and the work on an international framework (Cooper 2007) remain a foundation for developing accounting standards and financial reporting requirements.

Positive accounting theory places financial reports as a key communication tool used by managers of firms to communicate to the owners of the firm. Financial reports also communicate to the financiers of the firm and others who in some way have a contract with the firm (expressed or implied) or are contracted to the firm (Hines 1982). The firm has a complex series of implicit contracts between the managers and other stakeholders; these contracts are based explicitly on accounting numbers and situations reflecting accounting numbers (Watts and Zimmerman 1978). The primary role for this accounting information is to facilitate the monitoring of the contract between the manager of a firm and the stakeholders (Revsine 1991).

In a spirit of methodological pluralism (Shapiro 2006), this dissertation does not attempt to form a view of the best theoretical approach to investigating creative accounting critical historical perspective vis a vis positive accounting theory. The cursory attention given above to the

significant research categories is an attempt to recognise the considerable literature which informs analysis of the phenomenon of interest.

2.2.5 Users of Financial Reports

Identifying the users of financial reports and reviewing the users' need for accounting information has been the focus of a significant body of literature. Consequently the discussion below is not designed to be exhaustive but rather to assist identify a group within the community that may be affected by the presence of creative accounting. The identity of users of financial reports is important when assessing what information may be relevant to them (Sterling 1985 p241). It may follow that the identity of the users of financial statements is important when assessing the impact of creative accounting.

Accounting Standard AASB 101 *Presentation of Financial Statements* (section 334 of the *Corporations Act 2001*) does not set out the intended users of financial statements required under law. Recent work in relation to identifying users of financial statements is contained within a joint conceptual framework exposure draft (a collaborative effort between the International Accounting Standards Board (IASB) and the Financial Accounting Standards Board (FASB)). Whilst the exposure draft stops short of defining who the users are, it provides contemporary guidance on who may be included as users:

[financial reporting is]...useful to current and potential equity investors, lenders and other creditors making decisions in their capacity as capital providers. While this is still directed at the needs of a wide range of users, it now focuses on a user group to define the common needs..." Exposure Draft: Objectives and Characteristics of Financial Reporting (Clark 2008).

Some suggest a search for the users of financial statements began in the literature in the 1970s (Henderson and Pierson 1984). The literature identifies users of financial reports, amongst others

things, as (potential) investors, employees (Mauders and Foley 1974 p109), creditors, the media (Clarkson 1995), governments (May and Sundem 1976), customers and consumers (Briloff 1984 p474).

A frequent definition of users of general purpose financial statements includes investors and potential investors. Participation in the investment market has increased significantly over the last century in Australia (reflected in the increase in the number of direct share owners of shares listed on the ASX). These new participants are frequently individuals with small share holdings and arguably little proficiency in understanding the full accounting process. Stockbrokers, who the community might consider financial experts, may nonetheless not understand the finer points of accounting (Lang and Lundholm 1993). Small investors often participate in the market through mutual funds. These small investors, though themselves unsophisticated, are unlikely to be hurt by their reduced level of understanding as the fund manager is typically sophisticated (Dechow and Skinner 2000 p248)

Users, sometimes referred to as stakeholders, have to make decisions affecting their interaction with the firm. For example, a secured creditor may use financial information to establish the ability of the firm to service debts, or to identify other creditors who may challenge their secured interests. Employees, as individuals or as an employee association or union, may use financial accounting information to evaluate the security of employee entitlements, or to assess the ability of the firm to pay productivity remuneration increases (Mauders and Foley 1974 p111). Potential shareholders or investors may use accounting information to make the decision to invest or not to invest. The many users of financial reporting have varied reasons for requiring information from the firm. The interest of the firm may be best served when they offer required information, for without these stakeholders the firm may be doomed to failure (Clarkson 1995).

In the broadest sense, users of financial reports are made up of the members of society at large (Gray et al. 1996). Companies obtain a public privilege in the form of limited liability and it is argued there is a trade-off between the public privilege of limited liability and the burden of financial disclosure to the public who afforded that privilege (Parker 1990; Stanton 1996 p693).

Creative accounting or earnings management may involve the sophisticated use of accounting techniques (Nasser 1993). It is possible that some of the users of financial statements may be unable to identify or comprehend the impact of creative accounting within financial statements. Deegan (2004) argues that users need to have a sound working knowledge of accounting standards to assist them in interpreting financial reports. The accounting profession in Australia suggest users require accounting knowledge and skill to interpret financial statements effectively:

“General purpose financial report ought to be constructed having regard to the interests of users who are prepared to *exercise diligence* in reviewing those reports and *who possess the proficiency necessary to comprehend* the significance of contemporary accounting practice” Statement of Accounting Concepts No. 3 (paragraph 36) (Emphasis added).

Given the need for some degree of skill on the part of financial statement users, it may be argued that creative accounting presents a significant obstacle to users of financial reports, especially where the users are unsophisticated and not proficient in understanding fundamental elements of the accounting process.

2.2.6 Usefulness of Financial Reports

As already noted, Australian law ⁴ requires financial reports to be “useful”. Further the objectives set for the international accounting framework ⁵ also embody the notion that financial reports must be “useful”.

⁴ AASB101 under section 334 of the Corporations Act 2001

⁵ An exposure draft is currently being drafted jointly by the International Accounting Standards Board (European Economic Commission) and the Federal Accounting Standards Board (United States of America)

Historically, investigation into the usefulness of financial reports has been principally a critical-historical research objective (Lev and Ohlson 1984 p292). A brief overview of this research follows. Whilst appreciating the considerable body of research in this area, the notion that users may or may not process false or misleading information is no justification for the reporting of that false information or creative accounting (Sterling and Harrison 1974 p147).

Positive accounting researchers believe that usefulness is a necessary but not a sufficient condition for disclosure regulation (Lev 1987 p2). Users, as identified above, are multi-person stakeholders who have different motives, objectives and requirements. It is conceivable that information that is useful to one user is harmful to another, for example, a natural conflict that may exist between owners (requiring higher returns) and organised labour (seeking higher wages).

Benston (1973 p137) adds that for information to be useful, financial reports must provide data about the company which investors did not already know, data that affect the expectations about the future of the firm.

The usefulness of financial reports produced by the firm has been questioned in the literature (Hornigren 1973 p61; Maunders and Foley 1974 p112; Hines 1982 p298; Lev and Ohlson 1983 p263; Imhoff 1992 p98). Some have suggested that the diminished usefulness of financial reports may be due to accounting principles and current accounting procedures which are unlikely to produce measurements that are true or false (Chambers and Wolnizer 1991 p211; Imhoff 1992 p98).

A variety of empirical studies have examined share prices before and after a stock market release by listed companies. These studies found the stock price had already assimilated the news contained in the release before the release of financial statements, by finding no significant change

to the share price on the release of financial reports (Ball and Brown 1968; Watts 1977; Watts and Zimmerman 1978). These studies indicate that there is little or no “new” news in the formal financial statements of a public firm where market releases have already provided the information.

Lev and Zarowin (1999) suggest that financial reports are losing relevance as displayed in the growing gap between a company’s market value and the value stated in the balance sheet. Dubis and Neimark (1982 p34) go further when they state there is no evidence that financial reports are useful to individual investors, nor are they likely to be.

Positive research affirms it is not correct to conclude that financial statements are not useful on the basis that they contain no new news that affects the share price. Contrary to the fact that the share price has impounded all of the information in the financial reports, there is support for the notion that new information can be drawn out through fundamental analysis of the publicly available financial statements (Hines 1982 p303; Lev and Ohlson 1984 p63).

It is necessary at a firm level to provide comprehensive data to summarise the complex nature of the modern corporation (Revsine 1991 p16). Financial reports have a real role in identifying transactions and practices which may be only abstractions with no definitive measurement, yet they may have an impact on stakeholders and therefore need to be communicated.

A classic-historical approach to usefulness is that financial statements are a reliable source of primary information to the user, and can corroborate or verify previous information (Sterling and Harrison 1974; Sterling 1990). As a verification tool, the financial report is relied on to confirm previous at-market judgments made by investors on earnings data released but not stated in a comprehensive format nor audited (Hines 1982 p307).

The term “useful” extends beyond the decision usefulness of financial reports for a specific individual’s investment decisions to also incorporate a more general social welfare decision usefulness requirement (Maunder and Foley 1974 p117; Lev and Ohlson 1983 p262; Lev 1984 p3). Governments and regulators have a “public interest” perspective and consequently embed a social welfare goal implicitly and/or explicitly within disclosure regulation (May and Sundem 1976 p749).

Another view presented by Dubis and Neimark (1982 p35) identifies financial disclosure (publicity) as a catalyst for competition. Based on the classical capitalist model of Adam Smith, “public interest” is adequately protected when a society of individuals acting out of self-interest is combined with market competition. The authors argue that regulators have forced “voluntary” disclosure from firms in order to promote competition, thereby safeguarding the public interest. Within the Smithian model, regulation aims to reassure the public in a time of crisis (Dubis and Neimark 1982 p49). The public are the shareholders and “owners” and have access to the governance of firms through corporate disclosure.

2.3 Evolution of Financial Reports

Modern financial reporting in Australia has been in a continuous process of evolution since the 1850s, arguably the beginnings of the modern Australian company. The tradition of financial reporting has been built on 160 years of accounting thought and practice. Over this time significant flaws in the financial reporting requirements have also been identified (Chambers 1988 p36). Equally, it may be argued, creative accounting has accompanied the financial reports of corporations for the past 160 years via managers manipulating financial reports to their own advantage (Sterling 1990 p127). Equally, creative accounting is a historical issue as evidenced by

the suggestion of double entry reformist, Edward Jones, in 1796 that the new double entry system would make impossible undetected fraudulent errors (Littleton and Yamey 1956 p314).

The accounting system in Australia has followed an Anglo-Saxon model designed with flexibility to accommodate a variety of situations (Nasser 1993). With this flexibility has come a degree of choice between accounting techniques. A role of financial reporting requirements has been to limit the abuse that may result from managers taking a private advantage from that discretion.

2.3.1 Financial Reporting Requirements

Three sources leading the development of financial reporting requirements in Australia over the past 160 years may be identified as: **legislative regulations, professional accounting standards** and **stock exchange rules** (Whittred 1986; Hawkins 2003 pp145, 153, 159). While all of these sources have made a contribution to the development of financial reporting over this time, legislative provisions have had the most impact and forced the most change (Hawkins 1963; Hein 1963; Whittred 1986; Parker 1990). A brief synopsis follows, not exhaustive, of each source of financial reporting requirements, with the desire to set a context for discussion about the development of creative accounting in Australia.

Legislative Regulation

Australian financial reports are regulated through accounting standards which are given the backing of law under section 334 of the Corporations Act 2001. There are currently 48 accounting standards, with 43 amendments incorporated into the act ⁶. The general purpose financial statements regulated by AASB101 are an annual requirement for all public companies in Australia.

⁶ www.icaa.com.au/membershandbook (April 2009)

At the start of the modern corporation era John Stuart Mill (British philosopher, economist, legislator) wrote in 1848 that “publicity” should be seen as a quid pro quo for limited liability and believed that the enforcement of a company’s “publicity” or financial disclosure had been neglected (Parker 1990 p57). Regulators have played a role in developing financial reporting requirements for the whole period of the modern corporation, from the time Mill outlined the publicity requirement (Hawkins 2003 p136).

Accounting Standards are within the jurisdiction of the Australian Accounting Standards Board (AASB). As a government agency (Australian Securities and Investment Commission Act 2001), the board comprises 13 members. Twelve of the members are appointed by the Financial Reporting Council (FRC) and the chairman is appointed by the Minister for Superannuation and Corporate Law. The AASB reports to and is guided by the FRC. The 15 members of the FRC are appointed by the Treasurer of Australia ⁷. Table 3 below shows the close link between the regulatory authority governing reporting standards and the accounting profession as of April 2009.

Table 3 Membership of FRC & AASB

Professional Membership	FRC Members	AASB Members
ICAA only	3	6
CPA only	-	1
ICAA & CPA	6	4
NIA	1	-
None	5	2
Total	15	13

Source: www.aasb.com.au; www.frc.gov.au

⁷ www.frc.gov.au (April 2009)

Professional Accounting Standards

The Institute of Chartered Accountants in Australia (ICAA), CPA Australia and the National Institute of Accountants are represented on the AASB and the FRC through mutual membership. These three professional accounting associations probably represent the majority of accountants in Australia. The earliest link between legislators in Australia and the profession is perhaps The Victorian Public Accountants Bill of 1899, distinguishing qualified public accountants from the unqualified (Carnegie and Parker 1999).

Internationally, the accounting profession formed into professional associations from 1853, with Scotland the first to form a professional body, followed in England in the 1870s (Parker 1990). Immigrants to the Australian colonies, who brought with them membership of British Accounting associations, formed indigenous Australian bodies by 1900: South Australia 1885, Victoria 1886, Queensland 1891, New South Wales 1894 and Tasmania 1900 (Carnegie and Parker 1999 p99). Since formation, the Australian profession has played a role in the development of Australian reporting requirements over the past century (Parker 1990).

Stock Exchange Rules

Only listed public companies are subject to additional financial reporting rules of the Australian Stock Exchanges, either the Australian Stock Exchange (ASX) or the Australian Small Scale Offerings Board (ASSOB). Public companies typically not listed with Australian stock exchanges include public companies limited by guarantee, no liability public companies, and public companies which have not raised capital from the public.

The Australian Stock Exchange financial reporting requirements are listed within the Listing Rules, chapter 4: Periodic Disclosure (ASX Listing Rules 2005). The Periodic Disclosure requires quarterly, half yearly and annual reports to be filed with the exchange within set timeframes.

Chapter 4 sets out what is included in the annual disclosure: Rule 4.3 provides general purpose financial statements (required under the Corporations Act 2001) and Rule 4.10 sets out a further eight smaller disclosures in addition to the requirements of the Act.

The Australian stock exchanges, in various forms, have also made a lengthy contribution to financial reporting requirements, since the Sydney Stock Exchange was established in 1871 (before which private brokers advertised and sold shares independently) (Parker 1990). The Institute of Chartered Accountants in Australia, an inaugural member of the Australian Stock Exchange, has ensured the accounting profession's involvement in developing the Exchange rules (Low et al. 2006 p223).

2.3.2 Financial Reporting for the Modern Corporation

The development of financial reporting requirements is examined below in periods of 50 years. These periods are not identified or designed to be anything other than convenient arbitrary time periods for the purpose of this dissertation.

It is not the purpose of this dissertation to give an exhaustive list of exogenous events, shocks or corporate collapse that have led to the proliferation of regulation. It is useful, however, to review certain events to place a context for the development of accounting standards and the environment in which creative accounting has developed (Clarke et al. 2003).

1851 – 1900: Colonial Financial Reporting

Double entry accounting and an early notion of accounting for a firm were gaining ground by the 1850s (Littleton and Yamey 1956 pp298, 302, 306). Earlier examples of a firm using double entry accounting, like the Bank of NSW in 1817 (Craig and Jenkins 1996 p229), were not representative of the accounting methods adopted by businesses prior to the 1850s. As a colony of the British Empire, Australian companies were regulated by a British act “Registration and Incorporation,

and Regulation of Joint Stock Companies 1844” (Hein 1963), or by private acts (or charter) issued by each colony’s legislature (Morris 1984 p55; von Nessen 1999 p239).

The 1844 British Act marked the first time a business was able to incorporate merely through registration and may have signalled the beginning of the modern Australian corporation (Littleton and Yamey 1956; Chambers 1998 p36). The act contained a requirement to provide financial information to shareholders or other interested stakeholders (often incorporated within the company’s own constitution) (Chambers 2000 p129). Goldberg, who investigated 30 samples of Australian accounting records up until 1868, found no evidence of systematic application of the simplest accounting standards (Littleton and Yamey 1956).

Financial reporting seemed to gain momentum in Australia after 1870. The establishment of the Sydney Stock Exchange in 1871 may have been one catalyst for this increase in financial reporting by companies. Whilst the Exchange issued a set of printed rules for companies in the same year, no reference was made to reporting requirements (Morris 1984 p61). However, there is evidence of companies who wished to issue or sell shares paying for their annual financial reports to be printed in The Sydney Morning Herald around this time (Morris 1984 p64).

The colony of New South Wales passed legislation in 1874 similar in substance to the British companies act of 1844 (Morris 1984 p56) (Victoria already had the Companies Statute 1864 (Carnegie 1993 p62)). The NSW 1874 legislation included in Table A set out a model balance sheet and directors report. Whilst Table A financial reports were only a guide, not mandatory, most early Australian companies incorporated Table A type financial reporting within their constitutions (Morris 1984 p56).

The rise of the accounting profession in Australia, starting with the formation of the Adelaide Society of Accountants in 1885, may be another catalyst for the increased level of financial reports after 1870. Evidence of the increasing influence of the profession in Australia during this period is illustrated in the Victorian Public Accountants Bill of 1899, which restricted the recognition of “qualified accountants” in the colony of Victoria to members of the registered professional bodies in Victoria (Carnegie and Parker 1999 p83).

Australia was in an economic depression through the 1890s, NSW was in the grip of a drought and a land boom which had built up in previous years completely collapsed in 1893 (Morris 1984 p61) (Goddard 1938 p696). A banking crisis ensued (Carnegie and Potter 2000 p295). During this time, Britain was experiencing a financial crisis with high profile collapse of a range of railway companies and banks.

As a British colony, another catalyst for the increased level of financial reporting may have been the developments of the financial crisis in Britain. In particular, the financial collapse of the City of Glasgow Bank (1878) encouraged legislators to not only prescribe the publishing of financial statements but to place on banks the obligation of an independent audit of those financial statements (Watts 1977 p66). The failure of the City of Glasgow Bank (1878) had been caused by fraud and incompetence so blatant that an auditor could have easily uncovered its extent (Parker 1990).

It is misleading to regard company financial reporting as unregulated from 1850 to 1900, as considerable reporting requirements were developed during this period (Parker (1990) refers to a “remarkable amount of legislation”). Reporting was required under the specific statutes governing each of the public privilege corporations and illustrated by the 155 pages of audit tests required by

legislation in an 1892 book on auditing (Parker 2001). Anecdotally at least, audits seemed to be an acceptable practice for listed companies on the Sydney Stock Exchange illustrated by Tooth and Co's audited reports (Balance Sheet and Profit and Loss) available in 1890 (Morris 1984 p66).

It appears corporate failure at the beginning of the modern corporation era drove debate about the role of financial reporting and the responsibility of companies to report in a public way. The highest legislator in the British Empire, the House of Lords, was careful to set out the important distinction between private companies and companies which had some public privilege. It argued that companies with some public privilege, in particular the banks and railways "involved public interest, political and social" (Parker 1963 p56) and their "existence has depended upon the legislature; and to the legislature, therefore, they must be held in a peculiar degree responsible".

Creative accounting may have been implied at the time of the corporate failures of this period between 1851 and 1900, but there is little evidence the phenomenon was expressly dealt with by regulators, the profession or stock exchanges. A preoccupation of this period seems to be setting up a financial reporting framework from the ground up to deal with the phenomenon of the corporation, bearing in mind notions of public privilege and the responsibilities driven by the existence of that privilege.

A reason for this lack of emphasis on financial reports (and correspondingly creative accounting) during this period may have been the persuasive use of the legal precedent caveat emptor (buyer beware) (Hawkins 1963). Caveat emptor, as defined by the Oxford Dictionary, means the buyer has no redress if the buyer is disappointed in the purchase. The responsibility for the purchase resides in the buyer and no duty of care is offered by the seller. If the goods or service purchased are faulty, inappropriate or in any way unsatisfactory, it is the buyer's loss. The precedent is based

on the assumption that both the seller and the buyer are of equal strength, that is, both the buyer and the seller are capable of knowing all of the facts surrounding a transaction.

The rule of caveat emptor applied to financial transactions in the 19th century, including the purchase of shares, in the same way the rule applied to the purchase of other products and services. Accordingly, the purchaser of shares relied more on the reputation and recommendation of the broking firm and/or the company's dividend policy than on the financial information from the company (Hawkins 1963).

Hawkins (1963) describes financial reporting for companies listed on local exchanges as being controlled by a small number of influential owners. Colonial Sugar Refinery (CSR) was an example of the paucity of shareholders, initially incorporating with 10 shareholders (Hooks and Stuart 2007). Disclosure of company financial information by these owners was considered on request (not always granted) from small investors and interested parties. The companies and their managers argued that divulging the financial position of the company would give away their competitive advantage, allowing competitors to copy their structure, to expose their weakness or identify their strategic strength (Hawkins 1963).

John Stuart Mill's (British legislator 1865–1868) notion of “publicity”, the obligation of public companies to disclose financial information (Parker 1990 p57), challenged the legal precedent of caveat emptor in respect to financial reporting and disclosure to investors, potential investors and other consumers of financial reports (Chambers 1989 p18).

1901 – 1950: State Financial Reporting

By 1900 the number of companies incorporated within the colonies may have reached 1000 (486 companies were incorporated in NSW alone (Morris 1984 p78)). Company disclosures were

mostly voluntary and the presentation of a balance sheet or profit and loss varied from company to company (Morris 1984 pp65, 82).

Companies like Tooth and Co and CSR were increasing in size and the large influence they exerted in their respective markets concerned the regulators: Tooth and Co's near monopoly of the brewing market was subject to a NSW parliamentary inquiry in 1901 (Wilson and Shailer 2007 p248) and CSR escaped being nationalised by the Sugar Commission in 1912 (Hooks and Stuart 2007 p153). Both companies were suspected of using accounting techniques to manipulate reported profit, either to smooth profit in the case of Tooth and Co or manipulate accounting numbers when negotiating with unions in the case of CSR (Hooks and Stuart 2007 p159; Wilson and Shailer 2007 p247).

A move by the federal government to introduce a Federal Companies Act in 1907 was scuttled through fractious parochial politics (McQueen 1992 p16). McQueen (1992) speculates that competition between the states for new company registrations and commerce may have been a factor (McQueen 1992 p13). Although Victoria was the first state in Australia to legislate that a statement of profit and loss was to accompany a company's audited balance sheet the same year (Morris 1984 p53), it also issued broad exemptions from this requirement to many companies (McQueen 1992 p13). The Sydney Stock Exchange made it compulsory for new listings to disclose the annual profit and loss and balance sheet in 1904, but it was not until 1911 that all listed companies were effectively grandfathered to this rule whereby reporting for all listed companies was compulsory (Morris 1984 p63,83).

The 50 years between 1901 and 1950 was a period of at least three sizeable economic disasters: World War 1, The Great Depression and World War 2 (Barro 2006 p828). Barro (2006) identified

the Great Depression as having the largest economic impact on Australia, with a real fall in Gross Domestic Product (GDP) per capita of 20% (the real fall in GDP per capita in Australia for World War 1 and World War 2 was less than 15%) (Barro 2006 p828).

The Great Depression, 1929 to 1934, was a period of substantially reduced corporate profits, a sharp increase in corporate collapses and severe economic hardship in Australia (Barro 2006 p823; Wilson and Shailer 2007 p261; Low et al. 2008 p230). However, Tooth and Co continued to report a small modest growth in profits through these years, utilising reserves and otherwise manipulating the reported profit (Wilson and Shailer 2007 p261). Growing evidence of corporate malpractice in the years leading to 1931 led to a clamour for legislative reform (McQueen 1992 p18). During this time it appears that the public sought changes to the perceived poor financial disclosure of public companies (Hawkins 1963; Watts 1977 p66).

The Sydney and Melbourne stock exchanges updated the financial reporting requirements for new listing companies by including an aggregated balance sheet in 1927 (or alternatively a requirement to supply subsidiary reports for each with the holding company report). The aim of including an aggregated balance sheet was to improve the visibility of group activities (Whittred 1986 p105). It was not until 1946 that all new and existing listed companies were required to comply.

Australia experienced a wave of company regulation between 1936 and 1943, starting with the New South Wales Company Act 1936 (Victoria Companies Act 1938, Western Australia 1943) (Whittred 1986, p104). The company regulations introduced were largely based on the U.K. Companies Act 1929, including the disclosure regulation which now included a mandatory audit of both the profit and loss statement and balance sheet (Morris 1984 p53; Whittred 1986 p104; McQueen 1992 p18). The audit regulation required an independent auditor; the previous practice

of directors, officers of the company, or employees being appointed as auditor was prohibited (Hein 1963 p509).

The accounting profession seemed largely unconnected through this period. Perhaps inspired by the federation of the colonies of Australia in 1901, numerous accounting professional bodies met in Sydney the same year in an unsuccessful effort to amalgamate (Carnegie 1993 p71). Not until 1946 did the profession publish its first professional pronouncements in the form of five “Recommendations on Accounting Principles”, including one on disclosure (Whitred 1986 p106). The profession’s role appeared confined to the practice of accounting (and audit) and the rules of practice (as opposed to scientific/theoretical approaches) plying the practical art of accounting (Chambers 1954 p207) (confirmed in the stated objectives of one professional body during this period which had no reference to setting standards or reviewing accounting methodology (Carnegie 1993 p64)).

McQueen (1992) argues most Australian businesses were disinterested in company legislation, thereby suggesting that during this period statutory requirements had little more than a symbolic import. There is evidence particularly amongst mining companies during this period, that required financial reports were not produced as the chance of prosecution was extremely small (Morris 1984 p83; McQueen 1992 p22). Others argue that during this period there is evidence that voluntary disclosure at the time was sufficient to meet the needs of investors (Dubis and Neimark 1982).

1951 – 2000: National Financial Reporting

The accounting profession made an attempt to meet the technical demands for improving the financial reporting requirements through the 1950s and 1960s. Measures adopted by the profession to improve outcomes for financial reporting included a minimum graduate entry level

for professional membership (Dean and Clarke 2006 p148), a focus on developing conceptual constructs and accounting theory (Chambers 1956 p210; Gynther 1967 p289), and commissioning empirical research through the Accountancy Research Foundation (ARF) established in 1966 (Standish 1972). An example of the research undertaken is a Standish study (1972) published by the ARF examining financial reports issued by 120 Public Australian Companies in 1968. Amongst the findings was a statement identifying early evidence of possible creative accounting: “nearly every report adopted a pattern of structuring and disclosing the profit and loss account which was different from every other report”. Standish (1992) also reported varying treatment on the balance sheet in the recognition of assets and liabilities, in particular intangible assets and contingent liabilities.

Company regulation in Australia had significantly diverged from state to state. Work began in the 1950s toward a unified set of regulation throughout Australia resulting in the Uniforms Companies Acts (UCA) of 1961 (McQueen 1992 pp13, 23). The introduction of this act did little to change the prevailing laissez-faire, self regulating nature of company law and financial reporting (McQueen 1992 p25; Mees and Ramsay 2008 p11). Initially called the Corporate Affairs Commission and administered state by state, the act was eventually administered through a federal body called the Interstate Corporate Affairs Commission (ICAC) in 1974. An example of this laissez-faire approach was illustrated in the treatment of goodwill on consolidation (Gibson and Francis 1975 p170; Whittred 1986, p116). Gibson and Francis (1975) observed complete permissiveness and chaos in relation to goodwill on consolidation in financial reports of 525 public companies 1974 (Gibson and Francis 1975 p170). The authors pointed to the possibility that choosing between methods may “depend on the income smoothing needs of management”.

Notwithstanding a brief recession in 1951–3, the 1950s and 1960s in Australia is sometimes referred to as the “long boom”. Real growth over the twenty year period (1951–1970) averaged 4.5% and unemployment averaged 1.2% over the same time (Whittred 1986 p112; Simon 2003 p24). This period was followed by a major economic recession, starting in February 1970 with the minerals market bust (May et al. 2008 p230; Mees and Ramsay 2008 p14). The Australian Government initiated an enquiry into the “unethical and fraudulent industry behaviour” resulting in the Rae Committee Report: Problems in the Securities Industry 1974. An example examined was Poseidon NL (a Western Australian minerals company) whose share price went from \$0.80 to \$280.00 and back to \$60.00 within six months’ trading (Simon 2003 p28). The Rae Committee Report (1974) highlighted that the information relied upon by investors to make decisions about their investment in Poseidon was mostly uncorroborated rumour and recommended changes to the regulation of company reporting (Simon 2003 p29).

The National Companies and Securities Commission (NCSC) replaced the ICAC (Companies Code 1981 replacing UCA 1961). The new commission had greater enforcement powers aimed at improved governance and keeping a tighter regulatory requirement for financial information (von Nessen 1999, 241; Carlon et al. 2003 p38).

In light of evidence of balance sheet infidelity of public companies, the federal government established an independent Accounting Standards Review Board (ASRB) in 1984, reporting directly to the NCSC (Mees and Ramsay 2008 p41) and effectively sidelining the standards setting body established by the accounting profession (the Australian Accounting Research Foundation (AARF), previously the ARF). The accounting standards previously developed by the profession were reviewed and codified into law as an amendment under the Corporations Law (s.300(1)

(Godfrey and Jones 1999 p232). The NCSC was working to a new framework where shareholder power had eroded and the small investor required protection (Mees and Ramsay 2008 p37).

The 1980s was a period of large corporate takeovers: Elders IXL takeover of Carlton and United Breweries in 1983, GJ Coles takeover of Myer in 1986, Bell Resources attempted takeover of BHP in 1986 (Mees and Ramsay 2008 pp38–9). The stock market crash of 1987, the second largest one-day crash in Australia, resulted in corporate carnage. Hooker Corporation (George Herscu), Quintex (Christopher Skase), Bond Corporation (Alan Bond), Rothwells Limited (Laurie Connell), Budget Rent-a-Car (Bob Ansett), Spedley Securities (Brian Yuill) and Linter Group (Abe Goldberg) were among the casualties in the fallout from this episode. The NCSC pursued numerous directors (including those listed in brackets above) for breaches of their duties as directors and other unlawful acts resulting in prison terms for many of the above (Clarke et al. 2003).

The bailout of several merchant banks and the failure of other finance industry companies continued in 1990, including Tricontinental, Partnership Pacific, Elders Finance, Pyramid Building Society, Burns Philps Trustees and Estate Mortgage (Mees and Ramsay 2008 pp42–44).

The Australian Securities Commission (ASC) (later known as ASIC when the commission assumed responsibility of the Insurance and Superannuation Commission in 1995) replaced the NCSC in 1990. The ASC put in place a new overseeing body for the monitoring and regulating of financial reporting, the Financial Reporting Council (FRC). The ASRB was replaced by a new independent board, the Australian Accounting Standards Board (AASB) reporting to the FRC (Mees and Ramsay 2008 p56; Clarke 2009). In 1996 the Corporate Law Economic Reform Program (CLERP) was launched, guided in part by developments in the United States, but initially

to improve continuous disclosure into a new code: later to become the Corporations Act 2001 (von Nessen 1999 p265; Clarke 2004 p160).

There is evidence that financial reporting, though mandatory in this period, contained considerable variation in content and level of detail. Carlon et al. (2003) reviewed compliance to AASB 1033 (replaced by AASB132: Financial Instruments Presentation) by the top 500 ASX listed companies in 1998, revealing that only 33% of financial reports had offered more information, 67% barely satisfying the minimum qualitative disclosure (Carlon et al. 2003 pp48–49).

2001 – Present: International Financial Reporting

The last 10 years have also been marked by the corporate failure of HIH Insurance (Australia's largest corporate collapse), OneTel, Ansett Australia and Centaur Mining (Carlon et al. 2003 p36; Clarke et al. 2003; Clarke 2004 p160; Cooper et al. 2005 p156). More recently, as the global economic crisis from 2007 has developed, there have been more corporate casualties in the financial sector; Allco, BridgeCorp, FinCorp and Babcock and Brown are examples. The continued corporate collapse of major Australian companies has left some to perceive the Australian corporate sector as characterised by “a recurring cycle of regulatory failure and regulatory reform” (Cooper et al. 2005 p156).

What may be drawn from the brief survey of reporting for the modern Australian company is the large role regulation now plays in respect of the published annual financial reports of Australian public companies. The implementation of the CLERP 9 program includes changes to the financial reporting requirements (Clarke 2004 p153; Carlin and Ford 2006 p76):

- From 1 January 2005 a new framework for the presentation of financial statements became effective, designed to bring the Australian reporting requirement in harmony with the International Accounting Standards Board standards.
- Civil penalties for breaches of the disclosure requirements increase from \$200,000 to \$1 million.
- ASIC will be able to issues infringement notices and impose financial penalties to companies in breach of continuous disclosure rules.

These years have been marked by an increase in the proliferation of accounting standards. In 1995, for example, there were 29 Australian Accounting Standards Board (AASB) standards, by 2001 there were 43 standards and in 2009 there were 48 standards and 43 amendments. There is some evidence that the reporting requirement (the adoption of new IFRS based standards in 2005) was not well understood by companies, nor were there any perceived benefits by the companies affected (Jones and Higgins 2006 p650).

Deegan (2004) argues that, with the increased number of accounting standards, choices of accounting method and managerial discretion in the accounting reports have diminished, thereby reducing the ability of managers to opportunistically alter accounting reports. Others argue that the accounting standards under s.334 of the Corporation Act 2001 may at worst be used to conceal impending corporate collapse (Cooper et al. 2005 p159), or at best provide a bandaid to the excesses of corporate activity and executive behaviour in respect of the financial reporting requirements (Cornehls 2004 p51). Perhaps, though, it is understandable that policy makers in Australia have reacted with more regulation in an attempt to remedy the financial reporting requirements of public companies (Carlin and Ford 2006 p75).

2.4 Defining Creative Accounting

Chambers (1999), as former standard setter for New South Wales in the 1960s ⁸, may have understood the reality of the Australian financial reporting requirements when he wrote (Chambers 1999 p130):

“Financial statements *seemed* to be the product of systematic quantification, and they *purported* to represent the financial facts. What else could people unskilled in accounting do but take them at their face value? Certainly it would become apparent from time to time that by the deft choice of allocation or valuation rules companies could be made to appear solvent when they were in fact insolvent, profitable when they were unprofitable, creditworthy when their survival was as the proverbial snowflake in hell.”

A state in which the financial reporting requirements misrepresent the financial position of the firm is neither desirable nor intended by regulators (Chambers and Wolnizer 1991 p211). Creative accounting conjures perceptions of financial permissiveness, and the continued presence of creative accounting practices evidenced through autopsies of corporate failures is associated with a crisis of confidence in the Australian accounting profession (Clarke et al. 2003 pp29–30). Creative Accounting seems to be popularised by the media, for example The Australian newspaper used the term “Creative Accounting” within its business section more than five times in the seven months between September and April 2009 ⁹.

The literature has identified creative accounting variously as earnings management, earnings manipulation, income smoothing or window dressing (Stolowy and Breton 2000; Clarke et al. 2003 p29). This section sets out to establish a definition for creative accounting that may be utilised in the exploratory research considered within this dissertation. Also considered in this section is the identity of specific accounting techniques associated with creative accounting and consideration is given to the motivation of firms to use those techniques and methods.

⁸ Appointed the University of Sydney’s foundation chair of accounting 1960, RJChambers served the on the Accountancy Research Foundation (ARF) when established in 1966

⁹ www.theaustralian-news.com.au (April 2009)

2.4.1 A Definition for Creative Accounting

The definition of creative accounting has developed over time. Early literature reviewed the possibility that earnings may be smoothed or the amplitude (read volatility) of periodic earnings fluctuations reduced by utilising discretions available within accounting principles (Hepworth 1953; Copeland 1968). Further research added to the definition of creative accounting the deliberate choices of managers to dampen the fluctuations around a normalised level of earnings or otherwise select specific methods which will enhance the earnings of the firm (Gibson and Francis 1975 p170; Barnea et al. 1976). In the years following, research into creative accounting became more prolific, identifying purposeful interventions by preparers of financial reports, taking advantage of existing rules and/or ignoring some or all other rules (Verrechia 1983; McNichols and Wilson 1988; Schipper 1989; Craig and Walsh 1989; Merchant 1990; Revsine 1991; Dempsey et al. 1993; Nasser 1993 p2; Merchant and Rockness 1994).

Clever disclosure or presentation or non-disclosure of information also falls within the definition of creative accounting (Revsine 1991 p16; Nasser 1993; Deellaportas 2005 p189). Nasser (1993) asserts that even the most qualified auditor is unable to detect or identify the more sophisticated techniques used by some managers. Creative accounting research went on to expand the definition to include managers' attempts to mislead stakeholders or influence contractual outcomes directly linked to reported accounting numbers by transforming the financial accounts through use of accounting judgments (Healy and Wahlen 1999; Chambers 1999; Amat and Gowthorpe 2000; Amat and Oliveras 2005).

Over time researchers have escalated the severity of the manager's intent used within the definition. The escalation is found in the words used in the definitions from "influence" (1968), to "deliberate dampening" (1976), to "purposeful intervention" (1994) and "mislead" (1999).

The purpose of financial reports set out above is that financial reports are for users to obtain useful information to facilitate their economic decisions regarding the firm. There seems to be no room for this information to be misleading. If financial reports do contain creative accounting, on the face of it they are also designed by the managers to mislead users.

Managers may have used methods and discretions available in the accounting standards to flatter the firm's performance or financial position by applying favourable accounting choices, estimates or other accounting practices. Even where the departures from the accounting standards are fully disclosed, and the effects of the departure are contained in reports, suspicion by the user of further undisclosed departures from the accounting standards may diminish the value of financial statements (Perks 2004).

More recent research has built on measurement tools designed to test for creative accounting by articulating (testing, contrasting and comparing) differences between the balance sheet and the income statement (Jones 1991; Subramanyam 1998). This definition measures differences between working capital requirements (calculated from changes in balance sheet measures) and company earnings (profit before tax, extraordinary items and discontinued operations) to identify unexpected accruals (or creative accounting), recognised by some as the Jones (1991) model (Davidson et al. 2005 p250; Hsu and Koh 2005 p813).

A necessary condition of creative accounting is that it occurs within the constraints of the choices available within the accounting standards and therefore is not easily detected (Shah 1996; Herbohn 2008 p579). Previous research suggested a key way in which creative accounting may be detected is to measure the total accruals of a firm to identify firms with large differences between cash from operations and reported earnings and correspondingly abnormally large accruals (Dechow and Skinner 2000 p248; Hribar and Collins 2002).

A more recent model designed to identify unexpected accruals (creative accounting) adjusted the Jones (1991) model, specifically the use of a balance sheet to measure the level of non accrual activity for a firm (or the surrogate for cash flow). Proponents of this approach instead preferred cash from operations (instead of the balance sheet surrogate) to represent the non accrual activity of the firm, arguing balance sheet items may be contaminated by accrual activity without effecting the reported profit. The reasons for using cash from operations are a) increases in earnings from creative accounting are unlikely to generate operating cash flows (Mulford and Comiskey 2002 p370) and b) cash flows from operations formed part of the financial reporting requirements in Australia from 1992 (and was therefore readily available) (Coulton et al. 2004 p558).

The model developed by Hribar and Collins (2002) facilitates the identification of creative accounting empirically through the measurement of unexpected accruals. The accrual component of earnings is the difference between the operating profit and cash flow from operations:

$$TACC_{cf} = EXBI - CFO_{cf} \quad (\text{Hribar and Collins 2002 p109}) \text{ or}$$

$$TACC = OI - CFO \quad (\text{Coulton and Taylor 2004 p561})$$

Where $TACC_{cf}$ is the total accrual adjustments provided on the cash flow statement, EXBI or OI is the earnings before extraordinary items and discontinued operations and CFO_{cf} or CFO is the operating cash flows from operations.

The Hribar and Collins (2002 p109) definition of creative accounting utilises discretionary accruals as the creative accounting tool of choice for the manager of a firm. Within OI, adjusted earnings, managers may engage a wide range of creative accounting techniques and manipulations to prepare financial reports (Hsu and Koh 2005 p812).

Adopting this definition allows this dissertation to be more empirical in nature. Many studies in creative accounting research have been confined to identifying specific practices within specific firms, where the researcher has been required to have detailed knowledge of the firm, the industry or creative accounting technique being uncovered (Stolowy and Breton 2000).

Creative Accounting and Fraud

The distinction between creative accounting and a contravention of accounting standards and regulation (fraud) can become narrow (Dechow and Skinner 2000 p247). A useful distinction between creative accounting (earnings management) and fraud is produced in Figure 1.

Figure 1 Distinction between Fraud and Creative Accounting

	<u>Accounting Choices</u>	<u>"Real" Cash flow Choices</u>
"Conservative" Accounting	<u>Within GAAP</u>	
	Overly Aggressive recognition of provisions or reserves	Delaying Sales
	Overvaluation of acquired in-process R&D in purchase acquisitions	Accelerating R&D or advertising expenditures
"Neutral" Earnings	Overstatement of restructuring charges and asset write-offs	
	Earnings that result from a neutral operation of the process	
"Aggressive" Accounting	Understatement of the provision for bad debts	Postponing R&D or advertising expenditures
	Drawing down provisions or reserves in an overly aggressive manner	Accelerating Sales
"Fraudulent" Accounting	<u>Violates GAAP</u>	
	Recording sales before they are "realisable"	
	Recording Fictitious sales	
	Back dating sales invoices	
	Overstating inventory by recording fictitious inventory	

Fraud may contain the same components as creative accounting: changes of accounting method, fiddling material estimates and shifting period expenses (Spathis and Doumpou 2002 p512). A difference between fraud and creative accounting from the schema above is: fraud involves the production of financial representations based on or referable to fictitious transactions, while creative accounting does not, instead relying on manipulation of representations or manipulation of actual transactions or events.

2.4.2 Examples of Creative Accounting Techniques

The literature deals extensively with the identification and description of creative accounting techniques. Authors who have written texts identifying specific techniques and providing detailed illustration of the creative accounting techniques within corporate practice include De La Torre (2009), Clarke et al. (2003), Shilit 2002, Mulford and Comiskey (2002), Naser (1993), Smith (1992) and Briloff (1971). Of these, Clarke et al. (2003) detail creative accounting techniques utilised by Australian companies in Australia during 1960–2003. Table 4 presents possible classifications for creative accounting techniques and page numbers within the respective texts where the author deals with each in considerably more detail.

Table 4 Creative Accounting Techniques

Method By Author (page reference given)	Briloff 1971	Smith 1992	Naser 1993	Mulford 2002	Shilit 2002	Clarke 2003	LaTorre 2009
1 Accounting method change		137	93	48	112	194	7
2 Asset valuation	90	114	69	240	214	37	85
3 Consolidation treatment	90	29	167		214	117	110
4 Expenses moved inter Period	57	75	110	201	114	151	87
5 Extraordinary items		50	178	283	97	35	93
6 Intangible assets	93	94	121	222	129	207	113
7 Liability reduction	56	37	141	259	139	109	44
8 Merger accounting	63	179	164		212	68, 96	115
9 Revenue Recognition	56	41	38	159	146	83	3
10 Tax effect adjustments	199	166		262		34	98

Whilst not exhaustive, the categories of event types documented in Table 4 usefully cover an expanse of situations in which creative accounting may occur and potentially materially influence the content of firm financial statements. Brief examples illustrate Australian companies utilising a technique in each category of techniques from the Clarke et al. (2003) text.

Accounting Method Change

A manager may have discretion within the current accounting standards that may effect a change to the reported profit for the period. For example, discretion may be required in the adoption of a new or changed accounting standard, or discretion may be required to reassess a judgment about a prior estimate within the accounting records (Mulford and Comiskey 2002 p48; Shilit 2002 p123; Dellaportas 2005 p176). For example, 38% of Bond Corporation Holdings' operating profit in 1988 was the result of the adoption of a new standard ASRB 1012 "Foreign Currency Translation", Bond Corporation collapsed by 1991 (Clarke et al. 2002 p194).

Asset Valuation

Asset valuation, where the asset is recorded at cost, may not represent the present value of the asset (Chambers 1989 p20). Capitalisation of assets may be subjective, and overestimating or underestimating, depending on the desired outcome of the manager, may change the reported profit for the period (Naser 1993 p69; Dellaportas 2005 p179; De La Torre 2009 p85). The listing of One.Tel's spectrum license in the financial reports as an asset at cost, \$500 million, at the time of the Telco entering into a deed of administration may be a case of misplaced asset values (Clarke et al. 2002 p263).

Consolidation Treatments

Grouping separate entities together present to an opportunistic manager a number of different opportunities: the choice of merger or type of combination, the calculation of fair value and thereby the recognition of a goodwill value on consolidation (Tweedie and Whittington 1990 p89;

Shilit 2002 p214). Evidence of considerable choice and variable estimation for goodwill on consolidation is identified in an early Australian study (Gibson and Francis 1975).

Expenses Moved Interperiod

Amortising costs too slowly or, conversely, expensing costs that have a future benefit moves the costs from one period to another (earlier or later) (Shilit 2002 p125). A manager who is able to move cost may be in a better position to smooth income (Dellaportas 2005 p184). Tooth and Co deferred costs in the 1920s and brought forward costs in the 1930s, in the first instance to ensure reporting profit was maintained during the depression, in the second instance to ensure reported profit was lower when the company was involved in a political fight against prohibition (Wilson and Shailer 2007 p253).

Extraordinary Items

The adoption of AASB 101 (IAS 1) has prohibited references to “abnormal” or “extraordinary items” due to the abuse of the terms and their use by managers who tended to present any positive news (that may be extraordinary) as normal income, and any negative news (that may be reoccurring) as extraordinary (De La Torre 2009 p94). However, AASB 101 allows certain items to be separate from the profit and loss account, without reference to these being extraordinary (AASB 2009). In 1994, toward the end of the 1991–1994 recession, five Australian companies wrote off \$1.473 billion dollars in abnormal expense. Some or all of these were suspected of being recurring in nature (BHP \$318 million, MIM \$224 million, Gold Mines of Kalgoorlie \$335 million, Adelaide Brighton \$446 million and Goodman Fielder \$150 million) (Clarke et al. 2003 p36).

Intangible Assets

Aggressive capitalisation policies assist managers to report profits instead of losses by deferring expense to another period (Mulford and Comiskey 2002 p201). On the other hand, one of the

more difficult judgments that a manager makes is gauging when an asset is permanently impaired (Shilit 2002 p129; Dellaportas 2005 p194). In 1988, Westmex capitalised expenses, increasing the reported intangible asset to \$239 million (\$18 million in 1987), resulting in the suppression of the real costs of acquisitions and operations. In 1990 Westmex had a liquidator appointed (Clarke et al. 2003 p210).

Liability Reduction

An undervalued liability has an embedded loss that stays on the balance sheet until the liability is settled, at which time a loss or expense results (Mulford and Comiskey 2002 p259). Off-balance sheet financing is where there is an obligation to the firm to settle a debt which is not reflected on the balance sheet (Dellaportas 2005 p181; De La Torre 2009 pp3–14). By 1974 Cambridge Credit Corporation Ltd had a prolific number of subsidiaries, joint ventures and other inter entity arrangements leaving the real indebtedness of the company obscured. Eventually bad debts on loans to subsidiaries highlighted the creative accounting practices of the firm's managers (Clarke et al. 2003 pp109, 113).

Merger Accounting

Companies that effectively control non-subsidiaries through complex relationships can lead to off balance sheet financing and may facilitate a transfer of assets from the parent's balance sheet to effect a sale (typically profit on sale) without losing control of the asset (Tweedie and Whittington 1990 p88; Naser 1993 p165; Dellaportas 2005 p188). The Australian corporate version of a Ponzi scheme was evident in the fall of the Stanhill Group in 1963. A complex labyrinth of public and private companies continually disguised the poor performance of the various related group companies, related and associate companies (Clarke et al. 2003 pp66–68).

Revenue Recognition

There are many creative accounting techniques involving revenue recognition, including premature revenue recognition, revenue without transferring the sale risk or payment obligation, cost reductions recognised as revenues, accelerating sales by extending payment periods, and so on (Dellaportas 2005 p194; De La Torre 2009 pp3–14). HG Palmer recorded its highest profits in 1964, a year before being placed into receivership, where it was discovered sales were recognised where there was no probability of collection (Clarke et al. 2003 p83).

Tax Effect Adjustments

Timing differences between tax paid and tax payable can be utilised as a shield by recognising taxation losses as an asset, reversing these when profits are made requiring tax to be paid (Breton and Taffler 1995 p90; De La Torre 2009 p98). Adsteam had built a substantial asset in the form a Future Income Tax Benefit through the early 1990s which the Australian Securities Commission (ASC) stated should have been written off (Adsteam's demise came in 1992) (Clarke et al. 2003 p162).

2.4.3 Motivators for Creative Accounting

The purpose of this dissertation is not to identify the intent of the managers where creative accounting can be identified, but to merely explore the extent to which creative accounting is utilised by listed Australian companies (Davidson et al. 2005 p243). This is not to dismiss or diminish the effects of motive in respect of creative accounting because, as with a crime scene, without a motive there is no crime.

It is useful to identify the various motives of managers who utilise creative accounting and creative accounting practices (Davidson et al. 2005; Hsu and Koh 2005 p810; Cohen and Martinov-Bennie 2006). The creative practices evolve and change according to the regulatory environment and

changes to regulation affecting the firm and its situation, yet the motives are relatively constant (Nasser 1993 pp1–3; Herhohn and Ragunathan 2008 p579).

From the broadest view, managers' motivations are anchored in the belief and understanding that financial reports are used by parties other than the managers that produce the reports (Sterling 1985). Managers believe that they are able to target specific changes or adjustments they might make in financial reports at specific users in order to influence specific outcomes from existing and potential contracts with those users, i.e. increase in the share price (Dharan and Lev 1993 p476).

Manager motives for creative accounting fit into three categories (Hsu and Koh 2005 p811): managing market expectations (Lev and Kunitzky 1974; Merchant and Rockness 1994; Wilson and Shailer 2007), information asymmetry (Jensen and Meckling 1976; Healy and Palepu 2001 p409; Carlin and Ford 2006 p79) and managing credibility (Hepworth 1953; Dechow and Skinner 2000 p247). The discussion that follows is not intended to be an exhaustive examination of the potential motivations for creative accounting; rather, it is included to contextualise the explorative purpose of this dissertation.

Managing Market Expectations

An efficient market builds into the price of the firm not just the known facts concerning a firm, i.e. those contained within financial reports, promotional literature and other published data, but the market also factors into the price of a share the future economic opportunities and expectations of the firm (Lev and Kunitzky 1974; Watts and Zimmerman 1978; Verrecchia 1983 p181; Merchant and Rockness 1994). Bridging a performance gap between actual projections of the future known to managers and expectations of the market is often facilitated by a manager adopting creative accounting (Healy and Wahlen 1999; Dechow and Skinner 2000 p248).

For example, a firm may have strong sales and profitability in the reported period, but be aware of a future sales decrease due to the completion of a contract in a future unreported period. The reported results may lead the market to believe the firm is strong and input into the price of the share continued strong sales for the firm. The manager may wish to signal to the market a decrease in profitability. A manager can do this by reducing the profit in the reported period using a different accounting method or the more generous use of discretionary accruals, thereby bridging the gap between future expectations of the market and the known expectations of the manager (see the 1988 study by McNichols and Wilson on Bad Debt Accruals, p33) (Healy and Palepu 2001 p409).

A manager may want to influence expectations of the firm by way of a distraction (Collingwood 1991), where accounting choices and management discretion are used by the manager in a counter-intelligence styled strategy. An example of a distraction is where a firm will project to the market an issue using an accounting change, like writing off an extraordinary loss, thereby distracting the market from the real issue which is poor sales or loss of market share.

Managers are not able, even if they wish, to release all of the private information they possess about a firm. The information withheld has been referred to as blocked communication. Schipper (1989 p96) argues managers have incentives to adopt creative accounting techniques to communicate blocked information about the firm as a method of managing future market expectations.

Information Asymmetry

Corporate disclosure is critical to all stakeholders of the firm and comes in many forms. Some of these include the financial reporting requirement, securities market notifications, press releases, analysts recommendations and corporate websites (Healy and Palepu 2001 p406). Meckling and

Jensen (1976) suggest that the self-interested manager of a firm has incentives to expropriate investor's funds through paying excessive remuneration, making detrimental investment/operating choices, and obtaining perquisites. An information asymmetry exists between stakeholders and managers; for example, stakeholders are unlikely to possess the same insight as managers into the opportunity cost associated with repurchase of shares (Carlin and Ford 2006 p79).

The use of creative accounting by managers in instances where financial reports are altered to meet benchmarks in order for managers to receive direct monetary benefit has been corroborated (Schipper 1989 p92).

Healy (1985) reviewed the effect of linking managers' remuneration directly to reported accounting numbers and/or a stock price at given dates. Managers are likely to use accounting choices, estimates and other techniques to manipulate financial reports in order to achieve the benchmarks or signal to the market "good" news immediately preceding the designated stock price dates in a direct attempt to increase the stock price on that date (Zmijewski and Hagerman 1981 p13; Healy 1985 p87). Managers are able to engage in opportunistic behaviour because monitoring costs are expensive, and therefore the agency problems between executives and stakeholders are not completely eliminated (Dechow and Sloan 1991 p53).

Managing Credibility

The credibility of executives is enhanced through consistency, growth and profit. The early Ball and Brown (1968 p165) study elaborating on the link between a firm's release of information and changes to share price has spawned much research about the effect of creative accounting on a firm (more than is be elaborated in this dissertation). For example, the literature suggests that investors view a zero or positive surprise in reported earnings as evidence of a well managed firm

(Bartov et al. 2002 p202; Anthanaskou et al. 2009 p29). In the negative sense, studies have suggested that the credibility of managers is diminished by inconsistency, variability and downward revisions in earnings (Skinner 1994 p50; Kasznick and McNichols 2002 p18). There is therefore a strong desire for executives to smooth income and report consistent growth, or steadily growing earnings across multiple periods (Hepworth 1953; Skinner 1994 p50; Wilson and Shailer 2007 p261). Managers can use accounting choices and discretion (through the judicious use of accruals and prepayments, for example) in order to smooth the income from one financial period to another (Subramanyam 1996 p254).

Another stream of research has reviewed the need for managers to maintain covenants. Opportunistic management of Balance Sheet items within financial reports is also directly related to the agency issues between managers and lenders (Lev and Kunitzky 1974 p261; Watts 1978 p57), where the cost of contracting out of the monitoring costs is too great for the stakeholders (Jensen and Meckling 1976 p338). Stakeholders, typically financiers, often rely on covenants in the finance contract to help monitor the performance of the managers within the finance contract.

By way of example, this is illustrated by a manager of a firm (the borrower) who keeps an asset and the corresponding liability from the balance sheet of the firm via a contract with a third party supplier (where the risks and benefits of the asset are conferred to the borrower). Where this asset is a significant value then financial reports would understate the debt-to-equity ratio to an existing lender or potential financier. Avoiding a covenant violation will benefit the borrower, to the detriment of the lender (Mulford and Comisky 2002 p84). A variation on this theme is the non-consolidation of captive finance companies set up to remove receivables and debt from the holding company (Briloff 1971, Leasco example p152; Nasser 1993, GMAC example p189).

Treatment of Motivation

There has been an increased interest in and production of accounting research relating to creative accounting and Australian public companies since 2000; examples include Wells (2002), Koh (2003), Coulton et al. (2005), Davidson et al. (2005), Hsu and Koh (2005), Ahmed and Goodwin (2007), Herbohn and Ranunathan (2007) and Wilson and Shailer (2007). Though the study of creative accounting may vary greatly and be linked with both positive accounting theory and critical-historical theory, there remain strong and persistent motivations for the phenomenon of creative accounting. Thereby, the exploratory study of creative accounting proposed in this dissertation may assist to increase the understanding this phenomenon.

2.5 Research Identifying Creative Accounting

The literature relating to creative accounting (earnings management) is comprehensive. Empirical studies extend over 50 years and the research reaches across a range of concerns including the identification of particular accounting techniques employed for the purpose of creative accounting, the propensity for managers to adopt them and the effect creative accounting has on financial statement users.

This section is structured as follows:

1. a review of the empirical studies (mostly in the US)
2. a review of the empirical Australian studies by type
 - i. Specific Technique identification (particularly extraordinary items)
 - ii. Measurement of Unexpected Accruals
 - iii. Other (Historical perspective and Value Relevance).

The first section looks at literature mostly from the US, primarily to review some of the seminal writers recognised and built upon in the Australian literature. Each of the Australian papers is summarised with a view to establishing the exact extent of the research literature in Australia about Australian companies.

Perhaps one of the reasons further study is required in this area is the enduring nature of creative accounting through time, despite the claim of improving accounting standards, government inquiries and changes to the regulatory arrangements as discussed above. By undertaking research, and setting out the objectives and the method of the research, the research may be utilised by standard setters to determine better practice (Spacek 1963 p273), storing findings and hoping the research will contribute to the formulation of overall accounting theory (Sterling and Harrison 1974 p154).

2.5.1 Gaps Appearing in financial Accounts

The accounting literature has frequently considered the income smoothing behaviour prior to the 1950s, but it may not have been until the work in United States of Hepworth (1953) that the first research paper was published specifically in relation to this phenomenon (Buckmaster 1997 p1). Exposing the “considerable latitude” that existed within the accounting principles of the time, Hepworth (1953) went on to investigate eight techniques that may be employed to assist the process of income smoothing: accounting method change (inventory), asset valuation (property acquisition), expenses moved inter-period (deferring charges and depreciation adjustments), liability reduction (reserve accounting), extraordinary items (treatment of non-recurring charges), intangible assets and revenue recognition (Hepworth 1953 pp34–39). With the exception of consolidation treatments and merger accounting, the list of creative accounting techniques seems to fall within the same basic categories outlined in the definition section above.

An argument in the 1960s seemed to be about the merits of income smoothing as a satisfactory accounting outcome; the few suggesting the practice of “smoothers” may have a place were categorically censured by a majority who advanced the view that corporate results should appear as they are, not appear as something else (Buckmaster 1997 p3). Beyond the argument for and against creative accounting, Copeland (1968) reviewed attributes that “smoothers” exhibit (Copeland 1968 p102). Dascher and Malcom (1970) were some of the first researchers to present empirical evidence: they found evidence to support the hypothesis that managers of 52 chemical firms employed deliberate smoothing practices (Dasher and Malcom 1970 p255).

Spacek (1964) and Briloff (1972) were outspoken and critical of the profession’s inability to reign in income smoothing practices (Spacek 1964, 1965). Spacek suggested the profession had not discharged its responsibilities by not defining accounting principles clearly nor insisting on factual accounting (Spacek 1965 p24). Briloff published seminal work, detailing and illustrating creative accounting techniques actively used by listed companies in the United States at the time of his writing. Briloff has continued to publish works highlighting earnings management and the problems associated with this practice (Briloff 1972, 1984, 1990, 2002, 2005).

In Australia, Standish (1972) and Gibson and Francis (1972) questioned what appeared to be creative accounting practices in some of the first research of its type looking at corporate reporting of listed companies.

In the 1970s and 1980s there was a raft of empirical studies, often from the different perspectives of critical-historical theory (Ruland 1984; Sterling 1990; Shapiro 2006) and the newly developed Positive Accounting Theory (Watts and Zimmerman 1978). Some of those who contributed empirical studies investigating earnings management (creative accounting) were Lev and Kunitzky (1974), Sterling and Harrison (1974), Bernea et al. (1976), Verrecchia (1983), Healy (1985),

McNichols and Wilson (1988) and Schipper (1989). An example of one of these studies is that of Barnea et al. (1976), who revisited the use of extraordinary items as a means of manipulating ordinary income. The authors included four industries: paper manufacturers, rubber and tyre, air transport and chemical companies. Interestingly, the authors reviewed the assumption that managers desire a positive time trend of earnings per share, with the following supporting observations (Barnea et al. 1976 p113):

1. Managers forecast the earnings of the company accurately, via budgeting and sales forecasts, in order to achieve a smooth income time trend.
2. Managers are in the best position to make company income forecasts with their detailed and in-depth knowledge of the company's products, product development, contracts and margin expectations.
3. It is likely that managers have the ability to identify the ex-post trend of earnings based on management's accurate forecast of earnings.

More recent studies have established a link between earnings management and the desire for managers to benchmark against market expectation as identified by Barnea et al. (1976) (Koh 2003; Hsu and Koh 2005).

Another example of research at this time is that of McNichols and Wilson (1988), who used the bad debt provision for a firm as a proxy for the level of earnings management or income smoothing. The authors found that the "discretionary component of the provision for bad debts is income decreasing for firms whose earnings are unusually high" (McNichols and Wilson 1988 p4). Their findings are consistent with the income smoothing literature (Healy 1985) which

predicts that managers whose compensation is linked to minimum performance criteria are incentivised to maximise current discretionary expense in high income periods.

The 1990s was focused on the development of measuring the phenomenon both in extent and effect: Merchant (1990), Resvine (1991), Jones (1991), Imoff (1992), Dempsey et al. (1993), Merchant and Rockness (1994), Dechow et al. (1995), Becker et al. (1998), Black et al. (1998), Lev and Zarowin (1999) and Dechow and Skinner (2000).

An example of a research study of this time is that of Merchant (1990), who provided more rigorous study into the effects of creative accounting. Merchant's contribution was to show that managers of less certain businesses (businesses with higher risk profiles) were motivated to have a short-term orientation to firm objectives because they were more likely to make up any profit shifting in subsequent periods (compared with firms with highly predictable environments) (Merchant 1990 p311).

In another example, Dempsey et al. (1993) extend the empirical evidence demonstrating the use by managers of extraordinary items as a tool to smooth income (confirmed in Australia by Craig and Walsh 1989). The research used a threefold classification scheme to identify different types of companies: managers of a company with a dominant external shareholder (Externally Controlled or EC), managers of a company with a diffuse number of shareholders (Management Controlled or MC) and a company with an owner manager (Owner Manager or OM). The research concluded that (Dempsey et al. 1993 p495):

1. All three types of management had a propensity to use extraordinary items as a creative accounting practice.

2. The propensity to use extraordinary items as a creative accounting tool was significantly greater for non owner managers (i.e. MC and EC firms).
3. Firms with no identifiable “locus of control” (MC firms) had a tendency to report losses as extraordinary items and gains in normal income.

Yet another example was the research of Black et al. (1998 p1287), who, starting from a position that earnings management is a pervasive practice in the United States and other countries, looked at the differential accounting treatment for asset revaluation between countries. Comparing Australian and New Zealand companies with companies in the United Kingdom, the study provided evidence that companies not only adopt creative accounting practices but, where standards change, companies also change their behaviour and business practice (Black et al. 1998 p1315).

The ability of standards to change business practice is important from the perspective that the purpose of financial reporting standards is to reflect and communicate the economic position of the company and not to influence specific economic transactions of the company.

At the turn of the century, Healy and Wahlen (1999) reviewed the literature and identified areas of future academic research in creative accounting and earnings management:

1. the magnitude and frequency of creative accounting
2. specific creative accounting practices adopted by managers
3. identifying the motives of managers who practice creative accounting
4. the effect on the economy of misallocated resources resulting from creative accounting.

Healy and Wahlen concluded that, whilst there has been significant research effort into detecting creative accounting and identifying these practices in the financial reports of companies, there is little evidence of the magnitude and scope of these practices.

The role of the standard setter, according to Healy and Wahlen (1999), is to add value through enabling financial statements to effectively portray the economic position of the firm in a timely and credible way. The authors argue that accounting choice has a place in the production of financial statements, as it enables managers to select “reporting methods, estimates and disclosures that match the firms business economics” (Healy and Wahlen 1999 p366). This selection can have a positive effect of increasing the communication potential of financial statements. Where these benefits outweigh the cost of a small number of companies using accounting choices to mislead users, the cost of applying time and effort by standard setters may be misplaced. Further, Healy and Wahlen suggest that no evidence in the research is available to calculate if creative accounting practices can be mitigated by additional or improved standards.

Like any good crime fighters, the authors were looking for the four crime investigation essentials: a suspect, a motive, a weapon and evidence. In the context of creative accounting, the crime is the deliberate misleading of the users of financial statements. The managers are the prime suspect, they have the access to financial statement composition and have a motive, greed (compensation contracts amongst others). The suspect has various weapons available including accruals, depreciation, provisions for bad debts, loan loss and claim loss. The biggest issue facing the investigation is obtaining sufficient evidence linking the perpetrator/s to the crime.

Interest in creative accounting is also evident in Europe. For example, Amat et al. (2003) set out to identify the existence and importance of creative accounting in a Spanish context. The authors wished to test the view, held by leading authorities in Spain, that the accounting scandals which

beset the United States (Enron, WorldCom, Merrill Lynch etc.) would be unlikely in Spain. Using a sample of Spain's 35 largest companies (making the IBEX 35), Amat et al. (2003) reviewed financial statements of these companies for the 1999, 2000 and 2001 years. The authors identified creative accounting practices in financial statements of 24 of the 35 companies studied in one or more of the years reviewed. Manifestations of these practices included charging expenses to reserves on the balance sheet and not recording them on the profit and loss, recording insufficient provisions, capitalising expenses as an asset on the balance sheet, changing the inventory valuation method, varying depreciation rates with a class of assets over time, charging extraordinary fees for pension plans and not recording stock options as an expense when incurred.

2.5.2 Taxonomy of Australian Creative Accounting Research

There had been little empirical work done in Australia relating to creative accounting practices prior to 1990 (Craig and Walsh 1989 p231). The following discussion includes all the available work the writer has been able to identify. The Australian studies are categorised as i) Specific Technique identification (particularly extraordinary items) ii) Measurement of Unexpected Accruals and iii) Other (Historical perspective and Value Relevance).

The finance industry has generally been excluded from studies into creative accounting in the Australian literature, due to the unique working capital structure and overall balance sheet of companies within the financial sector (Davidson et al. 2005 p249).

Specific Technique Identification

The identification of specific techniques of creative accounting was prevalent in earlier works, both in the United States and in Australia. As a research method, reviewing for specific techniques has become less common for two reasons.

First, one of the most common techniques used by managers and consequently identified by researchers was the use of abnormal and extraordinary items (see below Craig and Walsh in 1989 and Godfrey and Jones in 1999). Harmonisation of International Standards removed these specific classifications, thereby making these techniques no longer available to managers.

Second, the measurement of unexpected discretionary accruals using the Jones (1991) method or the modified Jones (Dechow et al. 1995), combined with access to large quantities of data (i.e. the ASPECT database), facilitated larger samples and deeper interrogation of public company reported data.

Craig and Walsh (1989)

The primary objective was to discover if financial reports from a random sample of Australian listed companies contained evidence of profit smoothing. The authors identified companies utilising creative accounting (“smoothers”) by the company’s use of the “extraordinary items” technique, that is to make excessive adjustments to reported profit through the use of material extraordinary items. Data were captured from the 1985 published consolidated profit and loss statement for each of the 237 randomly selected companies from the Sydney Stock Exchange (approximately 1,100 companies were listed at the time), of which 153 companies were eliminated from further testing because they either did not report an “extraordinary item” (103) or they had insufficient data (46).

The findings indicate 33 of the 84 companies reporting “extraordinary items” were engaged in a creative accounting technique to smooth reported earnings over time. The authors concluded the study provided “strong substantive evidence” that listed Australian companies were actively engaged in profit smoothing.

Godfrey and Jones (1999)

Taking advantage of a regulatory change in 1990, a change to the definition of “extraordinary items”, the paper sought to identify companies that had exploited the use of “extraordinary items” in 1989 but were forced to reclassify and restate the 1989 result within the published 1990 comparatives. The multi-period analysis compared the 1989 published company financial reports to the 1990 financial reports statement of the 1989 comparatives. Of the 58 sample companies (from a population of 459 companies reporting extraordinary items in 1989), 48 companies were identified as “smoothers” because they restated income as ordinary in the 1990 comparatives (due to its recurring nature) and not “extraordinary” as initially recorded in 1989 financial reports.

Wells (2002)

The income smoothing tendency of a newly appointed Chief Executive Officer (CEO) to a top 100 ASX company was examined in this research. Over a ten-year period, 1984–1994, a sample of 65 CEO changes were reported by 42 firms (from a population of 77 CEO changes by 53 firms, 12 were excluded because of insufficient information or the exact timing of the CEO change was lengthy or problematic).

The research found that a reduction in earnings consistent with creative accounting was effected through abnormal and extraordinary items at the time of a CEO change. The incoming CEO was inclined to manipulate earnings downward to a) separate his performance from prior management and b) the consequence of releasing “bad news” was mostly irrelevant (in contrast to an incumbent CEO).

Measurement of Unexpected Accruals

Jones (1991) provided a definition of creative accounting as “an incidence of unexpected accruals” and correspondingly that the Total Unexpected Accruals can be measured via the following:

$$TACC = \alpha + \beta_1(\Delta Revenue - \Delta Receivables) + \varepsilon$$

Known as the Jones (1991) method, the measure was adjusted by Dechow et al. (1995) and became known as the modified Jones method. Further enhancements have come from, amongst others, Subramanyam (1998), Becker et al. (1998) and Hribar and Collins (2002). With new methods and access to large databases, researchers in Australia have increased their effort through: Holland and Ramsey (2003), Koh (2003), Coulton et al. (2005), Hsu and Koh (2005), Davidson et al. (2005) and Herbohn and Ragunathan (2008).

Holland and Ramsey (2003)

The research explored the idea that firms are focused on beating benchmarks, where benchmark beating is distinguished by reporting positive profits, sustaining last year's performance and meeting analysts' forecasts. A sample of approximately 480 firms listed on the Australian Stock Exchange between 1990 and 2000 was selected.

The researchers calculated the changes in two variables by year by firm: the difference between net profit after tax from one year to the next and the difference between cash flows from operations from one year to the next. Employing cross-sectional distribution analysis to plot these changes (a histogram distribution), the study concluded that there was evidence to support listed Australian firms engaged in creative accounting. The finding was particularly significant in relation to firms reporting positive profits and sustaining previous years' performance. The research findings also suggested firms do not manage earnings by timing actual cash flows.

Coulton, Taylor and Taylor (2005)

Building on the earlier work of Holland and Ramsey (2003), this paper developed the notion of unexpected accruals as a suitable test to identify creative accounting. The paper starts with a definition for the total accruals adjustment (TACC) for a firm:

TACC = OI – CFO, where Operating Income is OI and Cash Flow from Operations is CFO

The search for the unexpected TACC, or creative accounting moment, was undertaken through viewing a histogram of TACC for the sample (approximately 290 firms across 10 years – 1993–2002 – or, as the paper states, 2906 firm years). The research findings confirmed previous Australian studies that listed Australian companies engaged in creative accounting. The additional contribution of this work was to provide a development for the definition of the Total Accruals Adjustment or TACC:

[Jones (1991) Model]

$$TACC = \alpha + \beta_1(\Delta Revenue) + \beta_2 PPE + \varepsilon$$

[Modified Jones (1991) Model] (Subramanyam 1998)

$$TACC = \alpha + \beta_1(\Delta Revenue - \Delta Receivables) + \beta_2 PPE + \varepsilon$$

[Lagged Modified Jones (1991) Model]

$$TACC = \alpha + \beta_1(\Delta Revenue - \Delta Receivables) + \beta_2 PPE + \beta_3 LTACC + \varepsilon$$

Specifically, Coulton et al. (2005) investigated the effect of LTACC or the lagged effect of total accruals which they included to help the model with the less persistent nature of accruals (when contrasted with cash flow).

Koh (2003)

This research focussed on the linearity of the relationship between a company's use of aggressive creative accounting with a low level of institutional investors and those companies with a higher proportion of institutional ownership. Institutional investors were defined as insurance

companies, superannuation and pension funds. The sample size was proportionately smaller due to the focus on examining listed companies with high concentrations of institutional investors: approximately 21 Australian firms across five years – 1993–1997 – or, as the paper states, 107 firm years.

The method adopted by Koh (2003) was a variation on the Jones (1991) model transforming the model to distinguish between Discretionary Accruals (DACC) and Non Discretionary Accruals by limiting these to changes in revenues and property plant and equipment as follows:

$$DACC = TACC - (\alpha + \beta_1(\Delta Revenue - \Delta Receivables) + \beta_2 PPE + \varepsilon) \text{ (Subramanyam 1996)}$$

The research suggests that the relationship is non-linear: there is a positive association between a company's aggressive use of income increasing discretionary accruals where a lower level of institutional investment exists. A negative association between income increasing discretionary accruals exists for higher levels of institutional ownership (institutional investment above 54% of total share ownership).

Hsu and Koh (2005)

Extending the research of Koh (2003), which examined the relationship between a firm's use of creative accounting and the level of institutional ownership of that firm, this research sought to understand the role (if any) institutional investors have in determining the level of discretionary accruals of the invested firm. An additional eight control variables were included in the Hsu and Koh (2005) model for estimating DACC than were used in the model adopted by Koh (2003). The additional variables included firm size, leverage, auditor quality, managerial ownership, lagged accrual effect, operating cash flow, industry and year. The sample is made up of 201 firm years (the number of Australian firms included in the study is not specified) across five years between 1993 and 1997.

The research provides evidence that transient institutional investors create incentives for managers to aggressively manage earnings upward, while long-term oriented institutions constrain managers from utilising discretionary accruals as a means of managing earnings. These findings, the authors claim, support the proposition that high levels of institutional ownership can act as effective corporate governance controls in mitigating creative accounting.

Davidson, Goodwin-Stewart and Kent (2005)

Exploring the relationship between corporate governance and earnings management, this paper first identified five governance mechanisms: an independent board of directors, an independent chairman, an effective audit committee, an internal audit function and the quality of the auditor. The guiding principle that an increase in corporate governance leads to a decrease in the level of creative accounting was tested via reviewing the effectiveness of each governance mechanism against the measurement of earnings management using absolute discretionary accruals.

The study involved a cross-sectional analysis of 434 listed Australian companies in 24 industries for the year ending in 2000. Total Discretionary Accruals were arrived at via:

$$NDAC = \alpha + \beta_1(\Delta CFO) + \beta_2 PPE + \epsilon$$

$$TACC = \alpha + \beta_1(\Delta Revenue) + \beta_2 PPE + \epsilon$$

$$DAC = TACC - NDAC$$

The model, based on the Hribar and Collins (2002) approach to the modified Jones, specifically included cash flow from operations (CFO) as a proxy for the Working Capital balance sheet equivalent.

Other control variables utilised in the regression model included substantial shareholding, leverage, absolute current earnings, absolute change in current earnings, firm size, market capitalisation and extreme performance (i.e. the top 10% of firms by net profit and the bottom 10 % of firms by net profit).

The conclusions from the model developed within the study suggest that creative accounting is negatively associated with two of the five governance mechanisms tested, those being an independent board of directors and an effective audit committee.

Herbohn and Ragunathan (2008)

This paper investigated the probability of audit opinion modification being associated with identifiable creative accounting, utilising abnormal or unexpected changes in accruals as a proxy for creative accounting. Audit opinion modifications were identified as opinions that incorporate a qualification, emphasis of matter or any other explanatory note re “Going Concern”, “Inherent Uncertainty” or other.

From a population of 6505 audit opinions for ASX-listed Australian companies between 1999 and 2003, 861 opinions were modified audit opinions. For the “going concern” analysis 60 firms were analysed in a matched-pair (60 GC opinion firms, 60 control firms).

The abnormal accruals measurement was based on a modified Jones (1991) model:

$$TACC = \alpha + \beta_1(\Delta Revenue - \Delta Receivables) + \beta_2 PPE + \varepsilon$$

Other control variables utilised in the regression model included market capitalisation (firm size), lagged income effect, leverage, working capital ratio and audit firm size.

The results of the study reveal that going concern opinions have a negative relationship to creative accounting (perhaps due to Auditor litigation risk or the base performance of the firm), inherent uncertainty opinions have a greater persistence of abnormal accrual (creative accounting), and there was no evidence that other audit opinion modifications are exploited by managers to advance earnings management.

Other (Historical Perspective and Value Relevance)

Other research in the area of creative accounting has included a historical paper by Wilson and Shailer (2007) and a value relevance paper from Ahmed and Goodwin (2007):

Ahmed and Goodwin (2007)

The value relevance of earnings restatements was the objective of this paper. Earnings restatements were defined as “a net change to the prior-period’s earnings shown only in the current-period comparatives”. Data obtained for the top 500 ASX-listed companies between 1970 and 2003 were used to select the sample of 141 listed Australian companies who restated earnings results. This represented 195 firm year observations as some firms restated their earnings more than once during this period.

Utilising models from US value relevance literature, the evidence supported the proposition that restating firms were smaller and had higher growth opportunities than their industry competitors. Restatements were negatively related to future earnings changes and were often simply errors in the initial statements.

Wilson and Shailer (2007)

The researchers reviewed the available financial statements of Tooth & Co Limited for the period 1910 to 1965. Adopting a longitudinal historical perspective, the study presented primary source

evidence supporting the profit-smoothing behaviour of the managers at Tooth and Co over many years.

The paper reviewed manipulation of profits both negatively and positively and argued that the managers at Tooth manipulated financial reports possibly to reduce political costs. For example, in the years 1929–1934 during the great depression, profits for the company were reduced and only modest increases in profit were disclosed year on year. The company achieved reduced profits by increased balance sheet equity reserves. The authors suggest the company was able to realise two objectives using this strategy. First, credibility with investors was built with small steadily increasing profits at a time when many firms were struggling to make a profit. Second, smaller profits as opposed to the large profits that should have been disclosed reduced the visibility of the distilling and alcoholic beverage company during years where regulators threatened an alcohol prohibition.

The authors showed that the secret provision used to manipulate profits eventually reversed.

2.6 Chapter Summary

A summary of the research objectives of this chapter and the related outcomes is provided in Table 5.

Table 5 Chapter 2 Summary of Literature Survey

Objectives	Outcomes by section number
To identify the objectives of the literature review	Section 2.1 sets out four principal intentions for the literature review: 1. Define Financial Reporting

	<ol style="list-style-type: none"> 2. Review the evolution of financial reporting in an Australian context from 1850 to present 3. Define creative accounting, providing examples and illustrations of its use 4. Provide a taxonomy of the Australian literature empirically testing for creative accounting
To define Financial Reporting	<p>Section 2.2 provides an overview of the financial reporting function by:</p> <ol style="list-style-type: none"> 1. Establishing what is contained within financial reports and how the contents are regulated 2. Review the purpose for financial reports, or why these reports are relevant 3. Identify who the users of financial reports are 4. Set out the case for where financial reports are used and which decisions are made by the users in respect of information contained within the reports

<p>To survey the evolution of financial Reports within an Australian context</p>	<p>Section 2.3 establishes the origins of the modern financial report. Surveying the contributions the Accounting Profession, the Stock Exchange and Governments have made to the report's development. A brief survey of modern corporate history from 1850 reviews the development of Financial reports.</p>
<p>To examine the various definitions of Creative Accounting</p>	<p>Section 2.4 reviews the literature, examining definitions of creative accounting, including an overview of various techniques applied by firms within financial reports identified as creative accounting.</p> <p>A useful empirical definition first used by Jones (1991) is identified as the unexpected accrual decomposed from total accruals from any firm's financial result.</p>
<p>Provide a taxonomy of the Australian empirical studies of the creative accounting phenomena</p>	<p>Section 2.4 summarises the work of nine contemporary Australian papers which have contributed to identifying the creative accounting phenomenon. Most have utilised the definition</p>

	<p>for creative accounting as an “unexpected accrual” component of total accruals, others have used histogram analysis and two have attempted to identify the specific method or technique used by the managers of firms to manage their earnings.</p>
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The next chapter will build the research propositions of this study. The propositions will be developed based on the gaps found in the existing literature surveyed in this chapter.

DATA AND METHODS

3.1 Testing for Creative Accounting

Accrual reporting is regarded as a superior measure of a firm's performance when, on average, accruals have incremental information content over cash flow reporting (Dechow and Skinner 2000 p237). Cash flows may exhibit inherent problems of timing and mismatching across financial reporting years or periods, particularly in the short term (Surbramanyam 1996 p250). The use of accruals, specifically the discretionary component of accruals, by managers of firms to dampen the oscillating nature of a firms underlying cash flow may provide more useful information to investors and other users of financial reports (Subramanyam 1996 p259; Dechow and Skinner 2000 p239).

The notion that "too much" smoothing is now a pervasive issue in financial reports (where aggressive smoothing is generated by creative managers manipulating discretionary accruals) requires investigation by researchers (Dechow and Skinner 2000 p238). Creative accounting may result from the adoption of various techniques and methods utilised by managers of firms such as **accruals**, changes in **accounting methods** and **changes in capital structure** (Jones 1991 p206). The focus of this dissertation is on total accruals as the source of creative accounting. More specifically, this study utilises unexpected changes to total accruals of a firm as a signal that managers of firms may have manipulated discretionary accruals in order to manage earnings (Jones 1991 p206).

This chapter endeavours to construct a framework to test for evidence which may be consistent with the potential presence of creative accounting within the dataset. A sample of 497 firm years was selected, representing the reported earnings of 71 Australian companies for each year between 1998 and 2004. The sample selection criteria are set out in the next section.

The theoretical base for discovering and observing unexpected changes in total accruals utilised in this dissertation is the absolute accruals model developed by Hribar and Collins (2002). The absolute accruals method of detecting creative accounting seeks out the accounting accrual measure “total accrual adjustments” (TACC), which is the difference between Net Profit After Tax (NPAT) and Cash flow from operations (OpCash). This chapter reviews the evolution of the Jones (1991) and modified Jones models (identified in the Literature Review) on which the absolute accruals model is based, and which has been adopted by most contemporary creative accounting research in Australia (Koh 2003) (Davidson et al. 2005 p250; Hsu and Koh 2005 p813; Hribar and Nichols 2007 p1020).

Below a section is devoted to model development utilising TACC as the dependant variable, and an effort is made to operationalise the search for creative accounting through the examination of the data. The control variables of cash flow, time, sector and size used within the model have been widely adopted in the Australian creative accounting research and are explained in this section (Holland and Ramsey 2003; Koh 2003; Davidson et al. 2005; Hribar and Nichols 2007). The relationships between these variables are examined statistically within the framework of the specific models developed.

Finally an attempt is made to identify a model that is both cross-sectional (in the Jones (1991) tradition) yet having a time-series element (in the Holland and Ramsey (2003) tradition). A benefit

of examining the same 71 companies across seven years is the possibility the research can follow the use of creative accounting (identified by TACC) by specific companies over those years.

The tests used to detect possible creative accounting moments require a minimum number of firm years per firm; some studies have used as few as five consecutive years of data (Subramanyam 1996 p252), while others have used 10 nonconsecutive firm years (Dechow et al. 1995 p200). The dataset utilised in this dissertation uses seven firm years per firm.

At the end of this chapter the process adopted to examine the findings is concretised with a three-step examination to identify, investigate and confirm creative accounting of specific companies within the 71 sample companies.

There is an argument that accounting standards should be improved to increased transparency of financial reports (which include the profit and loss statement, balance sheet and the statement of cash flows and notes) to enable the reader to identify a manager using creative accounting techniques (Breton and Taffler 1995). Change in Australian accounting standards is a process often triggered by scandal, system failure, royal commissions and the like (more recently exemplified by the HIH collapse and Royal Commission) (Jones et al. 2004 p385). This dissertation seeks to assist the work of standard setters through specific company case studies while ascertaining the persistence of possible creative accounting in some of Australia's largest companies over the research period.

Time-Series vs. Cross-Sectional Study

Empirical studies investigating creative accounting through identifying abnormal discretionary accruals using the Jones, modified Jones or Absolute Discretionary Accrual models have adopted a cross-sectional study design (Jones 1991; Dechow et al. 1995; Koh 2003 p113). A cross-sectional approach generally performs better than a time-series approach due in part to the inbuilt

ability for a cross-sectional approach to generate larger sample sizes, the outcomes for which are more efficient and precise (Bartov 2000; Koh 2003).

Like the other cross-sectional approaches taken in Australian studies, this study captured firm years over an extended period: a seven-year period from 1998 to 2004. The difference between other studies and this research was that the 71 sample companies were represented in each year over the seven-year period. This provided a unique opportunity to model a time-series investigation in addition to cross-sectional examinations. Longitudinal research may facilitate the review of a number of relationships:

- facilitating comparison of one firm over another over an extended time, thereby helping to eliminate legitimate timing differences that a single period study may over-emphasise (Holland and Ramsey 2003 p43)
- enabling comparison of one sector over another filtering out economic impacts a sector may have in one year (Koh 2003 p113)
- allowing the ability to review a single firm over a seven year period (Petty 2004 p88).

The possibility of reviewing the multi-year decisions of the managers of the sample companies, or a group of managers within a sector, may draw attention to the adoption of creative accounting techniques over time:

- Managers motivated to mask a result will use one or more creative accounting techniques available to them (Healy and Wahlen 1999 p336; Christensen et al. 2002 p1086).
- Managers may not wish to concentrate on one creative accounting technique to avoid detection (Barnea et al. 1976 p113).

- In the multi-dimensional use of creative accounting techniques, patterns may be identified depending on market conditions, new innovations or cyclical trends (Tweedie and Whittington 1990).

A time-series approach has the disadvantages of 1) potential survivorship of companies within the sample and 2) the lengthy time period may mean the model is mis-specified or suffer from non stationarity (Koh 2003 p113).

International Financial Reporting Standards (IFRS)

The ability of the absolute adjusted accruals model to mitigate measurement error in discretionary accruals hinges critically on two factors: the removal of variation in nondiscretionary accruals (common across all companies in one industry) and the removal of variation in discretionary accruals that is correlated across firms in the same industry (Dechow et al. 1995 p200). The ability to eliminate all of these measurement errors may not be possible, however, where specific variations can be identified these should be eliminated in the research design (Hribar and Nichols 2007 p1021).

The accounting standards in Australia pre 2005 were largely influenced by the US as opposed to the UK/IAS traditions (Parker and Morris 2001 p301). International harmonisation is a significant change in financial reporting rendering the comparability of post-2005 financial information less certain. Whilst accounting standards have been amended through the seven years chosen for this study, international harmonisation adds noise to the sampling results.

The contents of financial statements for Australian listed companies change as the standards that govern the companies change, and the changes to standards in Australia through the introduction of IFRS are deep and fundamental (Jones et al. 2004 p399). A period of stability and predictability for financial reports can be defined as a period of fewer changes to standards (Briloff 1984 p509).

Jeanjean and Stolowy (2008) provided evidence that earnings management exists among Australian companies both pre and post the introduction of IFRS. In the research design the authors excluded the transition year, 2005, from the sample due to the unusual impact the new standards had on financial statements (Jeanjean and Stolowy 2008 p487). Consequently, results for 2005 were not included due to the unusual impact of the international accounting standards on financial reports. As this research adopted a time-series element, years after 2005 were also not included.

3.2 Sample Selection

The ASX 200 is an active index with firms being selected and deselected each year according to criteria set out by Standard and Poors and the Australian Stock Exchange. The composition of the ASX 200 may vary considerably for each year with some firms being added and other firms being deleted on a quarterly basis. This section steps through the sample selection methodology used to select the sample of 71 companies:

1. selection criteria utilised by Standard & Poors and the Australian Stock Exchange as a basis for selecting firms for inclusion in the ASX 200
2. selection criteria used to approximate the ASX 200 for the period of this dissertation's analysis which predated the introduction of the index
3. other selection (deselection) criteria required to amend the list of ASX 200 and surrogate selections
4. a reconciliation of the movements of firms in and out of the ASX 200 and surrogate
5. companies selected in the sample.

Selection Criteria for the ASX 200

The ASX 200 was established in April 2000 by the Australian Stock Exchange and Standard and Poors. The list of ASX 200 companies is made available from the Australian Stock Exchange each quarter. Companies which make up the list of ASX 200 are selected on specific market leadership criteria assessed by the index committee (a collaborative committee comprising members from the Australian Stock Exchange and Standard and Poors). The committee use at least four factors to assess the composition of the index for any one quarter, as follows:

1. Listing: only companies listed on the Australian Stock Exchange are eligible for admission into the index.
2. Size: an average market capitalisation for each firm is calculated using the end-of-day market capitalisation for preceding six months of trading for that company.
3. Liquidity: only companies that are actively traded on the exchange are considered for the index. The term “actively traded” is assessed through the use of a formula for relative liquidity (stock median liquidity/market liquidity). The relative liquidity ratio assists the comparison between firms through a company’s size, daily stock liquidity and daily market liquidity. The committee utilises the ratio to makes a judgment on whether a company’s shares are more liquid than another’s.
4. Free Float: a minimum of 30% of available stock must be held by the investing public.

Free Float is defined as listed holdings excluding:

- a. holdings held by Government or Government Agencies
- b. controlling shareholders
- c. other investors with more than 5% shareholding (but not investment funds, insurance funds and the like)
- d. other restricted portions.

An outcome of the ASX 200 selection process is that companies that make up the ASX 200 are not necessarily the largest 200 companies in Australia by capitalisation. Another outcome is that the ASX 200 does not comprise exactly 200 companies: for example, for the years ended 30 June 2000, 2001, 2002, 2003 and 2004 the companies that were in the ASX 200 were 219, 211, 190, 193 and 196, respectively.

Selection of Criteria Predating the ASX 200

The period covered by this dissertation is 1998 to 2004. As the ASX 200 was created in April 2000, a surrogate for the ASX 200 was utilised for the years ending 30 June 1998 and 30 June 1999. The surrogate was obtained through obtaining a list of the top 303 companies measured by market capitalisation. Some reasons why the top 303 companies were selected were:

1. Size of the company would be a dominant factor if the ASX 200 selection criteria were to be applied to the 1998 and 1999 years.
2. Increasing the number of companies considered from approximately 200 companies (in the ASX 200) to 303 ensured that companies who were selected for the 2000–2004 years were not excluded unless they were simply not listed in either 1998 or 1999.

Whilst the ideal scenario would have been to have ASX 200 companies to consider for the 1998 and 1999 years, a surrogate of 303 companies was operationally and conceptually straightforward.

Other Selection (Deselection) Criteria

A number of other selection issues arose when establishing the sample of 71 companies; specifically, companies were excluded from the sample due to the following:

1. The ASX 200 (2000–2004) and the surrogate 303 companies (1998 and 1999) were obtained as at 30 June of each year. As a consequence, companies which delisted before 30 June 2004 were not included, nor were companies which were selected at the end of the 1st, 2nd or 3rd quarters and deselected on or before the 4th quarter. TAB Limited is an example of a de-listed company in 2004, having qualified in the ASX 200 (2000–2004) and the top 303 companies (1998–1999). The company was delisted before 30 June 2004.
2. A company that restructured, merged, or was acquired was not included in the sample. For example, the property trusts Westfield America and Westfield Trust merged in 2004, after individually qualifying in the ASX 200 (2000–2003) and the top 303 companies (1998–1999), they were excluded from the final sample.
3. A company which went into administration or liquidation before 30 June 2004. Sons of Gwalia is a notable example, suspended from the ASX in 2004 after six continuous years in the ASX 200 or top 303 companies.

Reconciliation of the Movement of firms within the ASX 200

The movement of companies being added and deleted to the ASX 200 index and the surrogate index is represented in Table 6.

Table 6 ASX200 firm Additions and Deletions

	1998	1999	2000	2001	2002	2003	2004	Totals
S&P 200 at 1 July	-	303	303	219	211	190	193	
Add								
New Firm Additions	303	58	66	35	30	42	20	552
Firms Returning to ASX200	-	-	-	2	6	9	7	24
Subtract								
Firms Removed from ASX200	-	58	150	45	57	48	24	380
S&P 200 at 30 June	303	303	219	211	190	193	196	196

The total number of firms which were included in either the ASX 200 or the surrogate in any one year for the seven years 1998–2004 is 552. Of the population of available firms, 380 firms were removed from the index in those years. A small number of firms, 24 companies, were readmitted to the ASX 200 after being deleted in a prior year.

3.2.1 Companies Selected in the Sample

The sample selection process required a firm to remain in the ASX 200 or the surrogate index for each of the seven years. The sample of 71 companies was a result of 552 firms included in the index over the period, less 380 firms which were removed from the index. Six companies were deselected more than once after being selected for a second time and are included in the reconciliation below because they were also included twice in the firms deleted number of 380. One hundred and seven firms were included in the ASX 200 at 30 June 2004 but were excluded from the sample because they were selected in the index for six years or less.

Table 7 reconciles the population of top 200 Australian firms during the sample period to the selected number of firms contained within the sample.

Table 7 ASX Eligible Firms for Sample

Total eligible firms	552
Less:	
Firms Deleted from ASX200 within the 7 years	380
Firms added post 1998 still in ASX200	107
Add	
Firms Deleted more than once	6
Sample of Firms	71

The remaining 71 firms (12.8% of the total population of 552 firms) had a disproportionate weight of 497 firm years (30.8% of the total population of 1,613 firm years). The 481 firms rejected from the sample had from one to six firm years each, compared with seven firm years for each of the 71 sample companies. A full list of the sample companies is set out in Appendix A. A summary of the sample selected by industry sector is set out in Table 8.

Table 8 Sample Selection by Industry

Sector	No.
Consumer Discretionary	13
Consumer Staples	7
Energy	4
Financials	13
Health Care	5
Industrials	10
Information Technology	1
Materials	10
Property Trusts	4
Telecommunications Services	1
Utilities	3
Sample size	71

The 71 sample companies had a representation in each of the industry sectors, albeit information technology and telecommunications sectors were represented by only one company¹⁰. As a representative proxy for the Australian Stock Exchange, the companies in the sample were both deep (measured by the level of capitalisation, Table 10) and broad (measured by market sector).

3.2.2 Methods Used to Collect Data for the Sample Companies

The financial data collected for use in the research model were gathered from three sources:

1. hard copy of company Annual Reports
2. the Aspect Database
3. ASX (Australian Securities Exchange) published data and media releases.

Variables required to operationalise the modified Jones model to identify unexpected accruals (or creative accounting) included working capital measures and company earnings measures (profit before tax, extraordinary items and discontinued operations) (Dechow et al. 1995 p198; Davidson et al. 2005 p250; Hsu and Koh 2005 p813). The absolute discretionary accruals model test for creative accounting, which adopts a Cash Flow surrogate for the non accrual activity of the firm, requires additional cash flow variables from financial statements of the firms (Hribar and Collins 2002 p109).

¹⁰ The industry classifications identified in Table 8 and referred to here are the same 10 classifications as those developed and used by Standard and Poor's Global Industry Classification Standard (GICS) with one added sector: "Property Trusts" (which is unique to ASX listed entities. (Standard & Poor's 2002).

Published annual reports of Australian Listed companies provided many data items that have been included in this study. From the 497 financial company financial accounts obtained for this study, only 14 aggregate variables were collected and collated. Table 9 sets out the variables which were obtained from the annual published company reports:

Table 9 Dependent Variables Collected from Annual Reports

Jones (1991) Dechow et al. (1995)	Sales	Revenue
	PbTax	Profit before Tax
	Abnormal	Abnormal Items
	Other	Other
	Tax	Tax Expense
	PaTE	Profit after Tax and Extraordinaries
	CA	Current Assets
	TA	Total Assets
	CL	Current Liabilities
	TL	Total Liabilities
	E	Equity
Hribar and Collins (2002)	Sales	Cash receipts from Sales
	CfOps	Cash flow from Operations
	NCF	Net Cash Flows

Not all of these variables were available for all companies. Notably “Abnormal” and “Other” were not reliably reported in financial statements within the published financial accounts.

Published Annual Reports

A total of 497 published accounts were downloaded and hard copies printed for the sample companies across the seven years ¹¹.

¹¹ Downloads were obtained from the Macquarie University website www.lib.mq.edu.au, selected Databases, Finance and Aspect Annual Reports online)

Table 10 Source for Data Collected

<u>Year</u>	<u>Basis</u>	<u>Eligible / Sample</u>	<u>Sample Capitalisation</u>	<u>ASX Market Capitalisation</u>	<u>Published Reports</u>
2004	S&P200 as published by the Standard and Poors as at 30 June 2004	200 71	\$541,747 Million	\$838,579 Million	PDF versions on the Macquarie database
2003	S&P200 as published by the Standard and Poors as at 30 June 2003	197 71	\$415,750 Million	\$682,077 Million	PDF versions on the Macquarie database
2002	S&P200 as published by the Standard and Poors as at 30 June 2002	199 71	\$457,531 Million	\$701,036 Million	PDF versions on the Macquarie database
2001	S&P200 as published by the Standard and Poors as at 30 June 2001	210 71	\$492,198 Million	\$746,255 Million	PDF versions on the Macquarie database
2000	S&P200 as published by the Standard and Poors as at 30 June 2000	212 71	\$427,631 Million	\$681,954 Million	PDF versions on the Macquarie database
1999	Top 302 companies by capitalisation listed on the Australian Stock Exchange as at 30 June 1999 (Aspect Huntley)	302 71	\$400,287 Million	\$568,255 Million	PDF versions on the Macquarie database
1998	Top 302 companies by capitalisation listed on the Australian Stock Exchange as at 30 June 1998 (Aspect Huntley)	302 71	\$397,277 Million	\$488,885 Million	PDF versions on the Macquarie database

Aspect Database Data

All available financial information for the sample companies were downloaded from the online financial database on the Macquarie University website (www.lib.mq.edu.au, selected Databases, Finance and Aspect Annual Reports online). Not all of the variables collected from the published data were available from the electronic financial database.

Verification between manual and electronic datasets

The data collected from the two sources were compared and verified. Manually collected data always have the possibility of a transposition error. Database data have the possibility of reclassification error, especially where data collection rules were developed to classify and aggregate data from varying quality data sources. The primary data source for the Finance and Aspect Annual Reports online was the published annual reports. Published annual reports have a requirement to be comparable within each company report (comparing the current year with the prior year) but each sample company report is not necessarily comparable with the other 71 sample company reports.

No significant variations occurred. Where errors were identified, the written published accounting information was used as the authoritative source of data. Certain data were not available for certain sectors from the electronic database. In this instance the written published data were used without cross-checking. Table 11 outlines the reliable data collected from each source.

Table 11 Data Verification Table

		Manual	Electronic
Sales	Revenue	X	X
PbTax	Profit before Tax	X	X
Abnormal	Abnormal Items		
Other	Other		
Tax	Tax Expense	X	X
PaTE	Profit after Tax and Extraordinaries	X	X
CA	Current Assets	X	
TA	Total Assets	X	
CL	Current Liabilities	X	
TL	Total Liabilities	X	
E	Equity	X	X
Sales	Cash receipts from Sales	X	X
CfOps	Cash flow from Operations	X	X
NCF	Net Cash Flows	X	X

3.3 Measuring Creative Accounting Methodology

Methods used to identify creative accounting via identifying discretionary accruals varied, but essentially followed two streams of research:

1. identifying a specific creative accounting technique within financial statements of firms.

Examples included the McNichols and Wilson (1988) study of the use by US firms of bad and doubtful debts to manage earnings; Craig and Walsh's (1989) research into Australian company creative accounting via the use of extraordinary items; review by Black et al. (1998) of the international differences between firms use of non current asset revaluations; and Amat and Olivaras's (2005) study of Spanish firms approach to creative accounting through the recognition and amortisation of intangible assets.

2. identifying creative accounting through the discretionary portion of total accruals. A number of Australian studies utilising this method include those of Coulton et al. (2005), Davidson et al. (2005), Hsu and Koh (2005) and Herbohn and Rangunathan (2007).

A financial report may contain the use of one creative accounting technique, or a concert of creative accounting techniques that produce a desired result. The difficulty with tracking one variable to measure one creative accounting technique is a practical one. The manager who desires to manipulate the performance of the firm may do so using any or all of the available creative techniques. A creative manager may use the technique being investigated in one year, but not use that technique in future years, preferring other techniques available. Therefore testing for the existence of a single or defined set of creative accounting techniques may not have given this investigation the power to determine the existence of creative accounting in financial reports of the sample Australian companies.

A research model focusing on the sum of the accruals (a total accruals approach) should facilitate the capture of a larger portion of manager manipulations (Jones 1991 p206). Limitations of the total accrual method used to identify the existence of creative accounting included:

- By definition, a total accruals approach may not have the ability to pinpoint which creative accounting technique was used.
- A total accruals method may not be able to detect the use of creative accounting techniques where the sum of the methods adopted by the manager approaches zero. The manager of a firm may be attempting only to manipulate key line items in financial statements and not vary the level of earnings of the company (Jones 1991 p203).

- The financial performance of the company may be so bad that no amount of creative accounting can vary the earnings position significantly (Jones 1991 p203).
- The power of the total accrual tests may not have sufficient power to detect income-decreasing or income-increasing accounting choices (Jones 1991 p204).

3.3.1 Evolution of the Jones Model : the Discretionary Accrual Model

Perhaps the most common approach to testing for creative accounting is a discretionary accruals approach known as the Jones model (Davidson et al. 2005 p250; Hsu and Koh 2005 p813; Hribar and Nichols 2007 p1020). Jones (1991) uses a time-series model to estimate an expected or “normal” level of accruals, then uses the residuals as a measure of the discretionary accruals (Hribar and Nichols 2007 p1020). The model developed by Jones (1991) seeks to identify an “abnormal” total accrual and is expressed as follows:

$$TACC = \alpha + \beta_1(\Delta Revenue_t) + \beta_2(Property, Plant and Equipment_t) + \varepsilon$$

Or

$$TACC_j/TA_{j,t-1} = \alpha(1/TA_{j,t-1}) + \beta_1(\Delta Revenue_{j,t}/TA_{j,t-1}) + \beta_2(Property, Plant and Equipment_{j,t}/TA_{j,t-1}) + \varepsilon$$

TACC (Total Accruals) may be an unexpected abnormal total accrual identified by changes in Revenue from one year the next year and a function of the level of property, plant and equipment where total assets (TA) are used to control for changes to the firms economic circumstances (Dechow et al. 1995 p198; Subramanyam 1996 p256). The t subscript denotes the year and the j subscript denotes the firm. The abnormal accrual is defined as the difference between the total accruals (DA) and normal accruals (NA):

$$\Delta TACC = \Delta DA + \Delta NDA = (DA_t - DA_{t-1}) + (NDA_t - NDA_{t-1})$$

Or where identifying discretionary accruals (Subramanyam 1996 p254):

$$DA = (TACC_j / TA_{j,t-1}) - \alpha(1/TA_{j,t-1}) - \beta_1(\Delta Revenue_{jt} / TA_{j,t-1}) - \beta_2(Property, Plant and Equipment_{jt} / TA_{j,t-1}) + \varepsilon$$

The Jones (1991) study was focused on determining if managers of firms in the United States utilised creative accounting techniques in an attempt to benefit from import relief grants given through regulation administered by the United States International Trade Commission (ITC). If firms showed a decrease in revenue or earnings as a result of import regulation they were eligible for monetary grants to compensate the loss, the Jones study confirmed managers used techniques to reduce revenue and earnings to qualify for or increase the level of compensation (Jones 1991 p193).

The Jones model assumes that the average change of nondiscretionary accruals is approximately zero (Jones 1991 p207; Dechow et al. 1994 p198). This assumption may be a limitation to the adoption of the Jones model or variations based on the Jones model. Changes in economic circumstances (Dechow et al. 1995 p198) or the adoption of a changed new accounting standard may require a change to the permanent difference of the nondiscretionary accruals for a firm. Another limitation of the Jones model is the implicit assumption that revenues are nondiscretionary, which may have suited the study of grants given by the ITC, but is unlikely as managers may accrue abnormal revenue (debtors) in any year to manage earnings (Dechow et al. 1995 p199).

Dechow et al. (1995) proposed a modification to the Jones model to reduce the chance of the model not being able to detect creative accounting when managers utilise discretionary revenue accruals to manage earnings (Dechow et al. 1995 p199):

$$TACC = \alpha + \beta_1(\Delta Revenue - \Delta Receivables) + \beta_2(Property, Plant and Equipment) + \varepsilon$$

TACC (Total Accruals) may be an unexpected abnormal total accrual identified by changes in Revenue from one year the next year compared to changes in Receivables across the same years. This modified Jones model measures differences between working capital requirements (calculated from changes in balance sheet measures) and company earnings (profit before tax, extraordinary items and discontinued operations) to identify unexpected accruals (or creative accounting) (Dechow et al. 1995 p198; Davidson et al. 2005 p250; Hsu and Koh 2005 p813).

Both the Jones model and the modified Jones model seek to identify abnormal accruals around an event period. For example, the event period in the Jones study was the reporting year which was investigated by the ITC to determine the level of assistance to be given to the firm (Jones 1991 p204). The models require at least one parameter to be estimated, typically the “normalised accrual” estimate which may be determined from the mean total accruals around the event period (Dechow et al. 1995 p197). The direction of the variance between the normalised estimate and the discretionary accrual of the firm year was predicted by Jones in her study to be income decreasing.

Univariate and multivariate regression models based on observations and variables obtained from the modified Jones model were developed by researchers, designed to control variables that may impact on the use of discretionary accruals like cash flow, non discretionary income and a change in auditor; these control variables enhanced the robustness of the research outcomes

(Subramanian 1996 p259; Becker et al. 1998 p14). By controlling for events or known influences on discretionary accruals, multivariate models can be used to reduce the error variance of discretionary accrual estimation models (Hribar and Nichols 2007 p1017).

3.3.2 Absolute Discretionary Accrual Models

More recent models testing for creative accounting transferred the surrogate for the non accrual activity of the firm from the balance sheet (property, plant and equipment and working capital represented by a change in receivables) to Cash Flows from Operations (Hribar and Collins 2002 p109). Arguing the use of a balance sheet surrogate may contaminate results when testing the accrual component of earnings (the difference between the operating profit and cash flow from operations). The reasons for using cash from operations are a) increases in earnings from creative accounting are unlikely to generate operating cash flows (Mulford and Comiskey 2002 p370) and b) cash flows from operations is readily available as it forms part of the financial reporting requirements (in Australia from 1992) (Coulton et al. 2004 p558). This model, referred to as the absolute discretionary accrual model, is expressed as:

$$TACC_{cf} = EXBI - CFO_{cf} \quad (\text{Hribar and Collins 2002 p109})$$

or

$$TACC = OI - CFO \quad (\text{Coulton and Taylor 2004 p561})$$

where $TACC_{cf}$ is the total accrual adjustments provided on the cash flow statement, EXBI or OI is the earnings before extraordinary items and discontinued operations and CFO_{cf} or CFO is the operating cash flows from operations.

The most recent studies have used unsigned measures (i.e. without the use specific directional prediction of income increasing or income decreasing estimates) to identify the propensity of a specific firm or group of firms which may be more likely to engage in aggressive creative accounting practices (Koh 2003; Hsu and Kho 2005; Davidson et al. 2007; Herbohn and Ragunathan 2008). This approach, based on the absolute discretionary accrual model, contrasts with the models above which test for creative accounting (of the income increasing or income decreasing variety) using discretionary accruals measured by the residual or prediction error from an accrual estimation model (Hribar and Nichols 2007 p1018).

Identifying firm characteristics that may be associated with a lack of fit when using unsigned models may lead to an increase in the robustness of the tests, particularly when using the absolute discretionary accrual rather than the Jones model discretionary accrual (Hribar and Nichols 2007 p1018). Testing discrete industries using the modified Jones model can also assist mitigate measurement error in discretionary accruals by removing the variation in nondiscretionary accruals that are common across firms in the same industry (Dechow et al. 1995 p200).

If changes to nondiscretionary accruals are firm-specific, perhaps in response to economic circumstances effecting one firm, then the industry model will have limited power to extract all nondiscretionary accruals across the industry. Certainly the Jones (1991) study focused on the impact on manufacturers of the ITC regulation.

Another firm characteristic that may be associated with a lack of fit when using unsigned models, if not properly controlled for, is firm size. For example, large firms with large accruals have correspondingly large differences between cash from operations and reported earnings (Hribar and Collins 2002). Market capitalisation has become the most popular control for firm size where

previously firm size was a function of total assets (Davidson et al. 2005 p250; Hsu and Koh 2005 p813; Herbohn and Ragunathan 2008).

Firm characteristics controlled for in recent Australian studies include market capitalisation (firm size), lagged income effect, leverage, working capital ratio, substantial shareholding, absolute current earnings, extreme performance, auditor quality, managerial ownership, lagged accrual effect, industry and year (Davidson et al. 2005 p250; Hsu and Koh 2005 p813; Herbohn and Ragunathan 2008). Not all 12 of these control variables are used in all studies; instead the control variables are tailored to the study objectives to eliminate noise within the residual plotting (Hribar and Nichols 2007 p1021). Certain control variables have assumed certain definitions over time, for example controlling for auditor quality is measured as Big four or non Big four (Hsu and Koh 2005 p813; Herbohn and Ragunathan 2008).

In summary, the investigative framework available for this dissertation had two components. First, the Jones model equation facilitated an estimate of “normal” accruals, and the residual, ϵ , was interpreted as the discretionary or abnormal accruals. Then, taking the absolute value of the residual results in an unsigned measure of creative accounting was intended to identify the potential propensity of the firm to manipulate earnings (where the mean of the absolute discretionary accruals is defined by the standard deviation of the distribution of signed discretionary accruals) (Hribar and Nichols 2007).

The null hypothesis for this framework was no evidence of creative accounting. The risk of incorrectly rejecting the null hypothesis was higher when using the absolute discretionary accrual model than when using the discretionary Jones model (Hribar and Nichols 2007 p1020), especially when economic characteristics of the firm, i.e. inherent volatility, were not controlled for.

3.4 Theory Development and Model Building

There is evidence that Australian public companies engage in creative accounting practices when reporting Net Profit after Tax (NPAT) to ensure profits (and avoid losses) and to avoid earnings decreases compared to the previous year (Holland and Ramsey 2003 p60). Plotting the NPAT of 477 companies over 11 years (5030 firm years) on one histogram, two observations were apparent: the distribution clearly exhibited a strong positive skew (more reported profits than reported losses), and there was abnormality in the mostly smooth skewed distribution at the point of zero (the discontinuity at zero showed a spike in slight positive NPAT and a paucity of slight negative NPAT) (Holland and Ramsey 2003 p53).

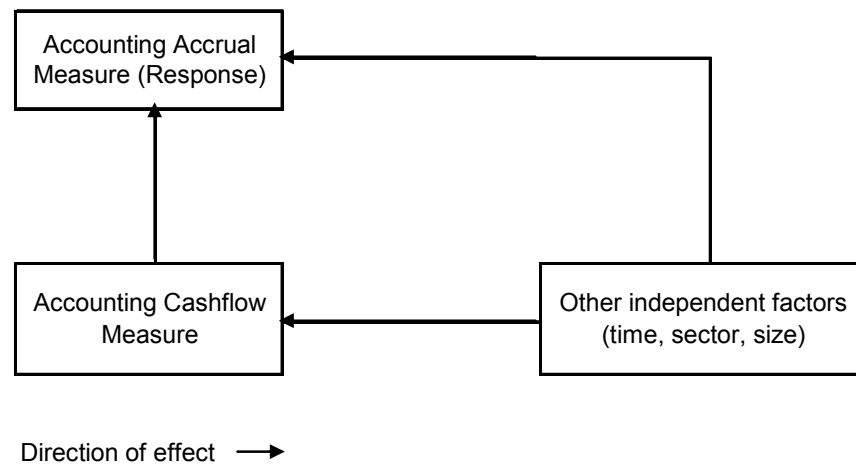
More recent research has preferred to develop the cross-sectional Jones or modified Jones models to provide evidence that Australian public companies engage in creative accounting (Koh 2003 p113; Coulton et al. 2005 p561; Davidson et al. 2005 p251; Herbohn and Ragunathan 2008 p585).

This section develops several models that are built on the Jones (1991) cross-sectional model. The development of the various models is an attempt to identify a model which can generate investigative power facilitating the identification of particular companies that may have engaged in creative accounting. The Australian studies adopting a Jones cross-sectional model have used the model to test samples to determine the likelihood of the research propositions. Here the power of the model is being used to identify possible firms which have engaged in aggressive creative accounting.

First, a review of the relationship between the accounting accrual measures (the response variable) and a set of independent variables including accounting cash flow measures is necessary – specifically, the control variables of the proposed models which describe the characteristics of the

different companies within the sample: time, sector and size. The relationship between the model variables is set out in Figure 2.

Figure 2 Relationship of the Model Variables



Next, developing a series of statistical data models belonging to a family of models commonly known as generalised linear models (GLMs), the choice of distribution for the response variable and inclusion of various model factors are reviewed. The extent of correlation embedded within these relationships can be examined via statistical measures to determine if a combination of creative accounting techniques could be at play. This section examines the use of the normal or Gaussian distribution and the Gamma distribution models to ascertain which has greater investigative power to identify particular companies engaged in creative accounting activity.

3.4.1 Control Variables

The context of statistical modelling in this research was the accounting accrual measure (TACC or total accrual adjustments). This was the dependent or response variable, which is dependent on a set of variables called the control variables or regressors (Seber and Lee 2003).

A further aim of this study was to identify a set of factors that are able to explain the response variable in both a comprehensive and predictive manner. The model may be used as a predictive tool to identify and observe whether any of the behaviours of creative accounting can be observable among Australian companies within the sample.

Factors that can be used to explain the response variable are classified into two categories. First are the cash flow measures that form part of the annual reports, then there are the control variables time, sector and size. The link between creative accounting and an investigative predictive model is the model's ability to predict the level of accounting accrual measures for every observation in the sample, given various characteristics, such as the level of cash flow and the other control variables. Additionally, by comparing the predicted values from the model with the actual response variable observed in the sample, it may be possible to observe trends and patterns of creative accounting practices amongst companies sharing similar characteristics. Some reasons for including cash flow, time, sector and size as control variables are set out below:

Cash flow

Differences between profit and cash from operations, or more generally between accrual accounting and a companies cash flow, are expected, indeed conventional (Surbramanyam 1996 p250). Accrual accounting methods and standards assist companies to adjust for legitimate timing differences in an accounting period to improve comparability, helping to matching expenses against income (Dechow and Skinner 2000 p239).

Timing differences are also a function of accounting standards, defining the difference between the NPAT within financial statements and cash flows. The relationship between NPAT and cash flows is significant when identifying and measuring the accrual activity of the firm (Hribar and Nichols 2007 p1019). Creative accounting is unlikely to generate operating cash flows and firms

are unlikely to use the timing of actual cash flows to manage earnings (Mulford and Comiskey 2002 p370; Holland and Ramsay 2003 p59).

Absolute discretionary accruals (TACC) are negatively associated with the goodness of fit of the discretionary accrual model and positively associated with the variance of total accruals, making cash flow a significant control variable when using absolute accrual models (Hribar and Nichols 2007 p1019). A limitation of using cash flow as a control variable in the model is where loss years are present within the sample, the power of the model is decreased; without loss years in the sample, total accruals are less persistent than cash flow (Coulton et al. 2005 p564).

Time

The balance date for the financial report is an artificial point in time. The matching principle requires that expenses be matched against revenue, with little regard to the cash consequences of a transaction or series of transactions (Holland and Ramsey 2003 p59). Timing differences are created between, for example, the time a sale is recognised and the date at which the cash is received for that sale.

The timing differences between the NPAT and cash flows should approach zero over the long term (Holland and Ramsey 2003 p59). That is, a positive timing difference in one year is likely to reverse over the next or subsequent years through a negative or series of negative timing differences.

The longitudinal data utilised in this research were specifically designed to accommodate the effects of timing differences over time. The ability to identify abnormal or unusual timing differences in a seven year period is passable (Koh 2003 p116; Hsu and Koh 2005 p814). However, the risk of timing differences not being eliminated over the seven years of the study, 1998 to 2004, remains.

Sector

There are two reasons to include sector as a control variable. First, industry groups have been identified in most Australian studies utilising the Jones cross-sectional model as a significant control variable (Koh 2003 p115; Davidson et al. 2005 p250; Hsu and Koh 2005 p814; Herbohn and Ragunathan 2008 p585). Clearly, different industries have separate and unique reporting requirements and cash flow patterns.

Second, it appears little is known of the appetite for creative accounting techniques between sectors. Anecdotally, some sectors have access to different accounting techniques than others as the level of discretionary accruals are a function of the accounting standards applicable to specific sectors or companies.

For example, a manufacturer may have choices regarding inventory valuation, work in progress, and revenue recognition where each of these separate choices may be not applicable to a financial institution. Larger or more significant levels of creative accounting techniques may be identified between sectors (Koh 2003 p115). The comparison between sectors may assist, in directing further research into creative accounting by highlighting sectors which exhibit a higher level of creative accounting than other sectors.

For modelling purposes, the 11 Global Industry Classification Standard (GICS) sectors classifications within the ASX200 were reduced to five pooled sectors. The lack of observations in some GICS sectors, such as telecommunications and information technology (each of which were captured only by a single company), may lead to unreliable results. Combining the GICS sectors into pooled sectors appreciably eliminated a small sample bias that would otherwise be introduced into the analysis and the development of the models (Hsu and Koh 2005 p814).

The pooled sectors were selected first to evenly spread the distribution of companies between different sectors and, second, to combine sectors having similar attributes. For example, the two GICS sectors, Property Trusts and Utilities, which have significant levels of investments, commercial and residential properties, and infrastructure, were pooled.

Not all of the attributes of one GICS industry grouping will be present in the GICS industry grouping being combined with it to create the new super Sectors. However, care was taken when developing the model not to discriminate any one industry group by combining it with another. The new pooled sector groupings are shown in Table 12.

Table 12 Re-grouped Sectors Used in Model

Sector (S&P 200) Sample Companies	Company Number	Sector Number
Sector 1		
Consumer Staples	7	1
Information Technology	1	1
Staples	8	
Sector 2		
Materials	10	2
Industrials	10	2
Industrials	20	
Sector 3		
Financials	13	3
Financials	13	
Sector 4		
Consumer Discretionary	13	4
Telecommunications Services	1	4
Discretionary	14	
Sector 5		
Property Trusts	4	5
Utilities	3	5
Health Care	5	5
Energy	4	5
Utilities	16	
Total Sample	71	

The finance sector was included in the sample 71 companies. As previously noted in the Literature Review, the finance industry has been specifically excluded from the Australian research into creative accounting (Wells 2002 p175; Koh 2003 p116; Holland 2003 p50; Coulton 2005 p558; Davidson et al. 2007 p249; Herbohn and Ragunathan 2008 p581).

Size

Size is used as an embedded control variable for any study utilising the Jones cross-sectional model as a significant control variable (Jones 1991; Dechow et al. 1995; Subramanyam 1996; Becker et al. 1998; Koh 2003; Davidson et al. 2005; Hsu and Koh 2005; Herbohn and Ragunathan 2008).

The relationship between the size of a company and a company's propensity to utilise creative accounting techniques is ambiguous (Koh 2003 p114). Watts and Zimmerman (1978) contend that larger companies may be more likely to manage earnings to reduce their political visibility, whilst Bartov et al. (2000) suggest size is negatively associated with earnings management.

The sample of 71 listed companies from the ASX 200 goes some way to addressing the effects of size on the dependent variable of discretionary accruals as the sample consists of large companies listed on the Australian Stock exchange. However, significant differences in size between the sample companies still existed, requiring the inclusion of size in the list of control variables.

An effective measure of company size is the ASX market capitalisation for each company within the sample (Herbohn and Ragunathan 2008). Other Australian studies have utilised a function of Total Assets as an appropriate measure of company size (Koh 2003; Coulton et al. 2005; Davidson et al. 2005; Hsu and Koh 2005). The inclusion of the Finance sector within this study, which has a unique total asset position vis a vis other sectors, has led this research to adopt the

independent (at least from the balance sheet) and unbiased nature of market capitalisation as a proxy for the size of a company.

To identify the significance size has on the 71 sample companies, the top 20 companies with the largest average market capitalisation over the seven years were arbitrarily separated from the others. These Large Capitalisation companies were incorporated into the model as the independent factor for size. The 20 companies with large capitalisation are set out in Table 13.

Table 13 Top 20 Companies by Average Seven Year Capitalisation

Company Name	ASX Code	ASX Sector	Sector
COLES MYER LTD	CML	Consumer Staples	1
WOOLWORTHS LIMITED	WOW	Consumer Staples	1
BRAMBLES INDUSTRIES	BIL	Industrials	2
QANTAS AIRWAYS	QAN	Industrials	2
RIO TINTO LIMITED	RIO	Materials	2
WESFARMERS LIMITED	WES	Industrials	2
AMP LIMITED	AMP	Financials	3
AUSTRALIA & NZ BANK	ANZ	Financials	3
COMMONWEALTH BANK.	CBA	Financials	3
MACQUARIE BANK LTD	MBL	Financials	3
NATIONAL AUST. BANK	NAB	Financials	3
QBE INSURANCE GROUP	QBE	Financials	3
ST GEORGE BANK	SGB	Financials	3
WESTFIELD HOLDINGS	WSF	Financials	3
WESTPAC BANKING CORP	WBC	Financials	3
NEWS CORPORATION	NCP	Consumer Discretionary	4
TABCORP HOLDINGS LTD	TAH	Consumer Discretionary	4
TELSTRA CORPORATION	TLS	Telecommunications	4
STOCKLAND TRUST GRP	SGP	Property Trusts	5
WOODSIDE PETROLEUM	WPL	Energy	5

The comparable size of the Top 20 sample companies relative to the total sample was approximately 80% of the capitalised value of the 71 sample companies (Table 14).

Table 14 Top 20 Companies Aggregate Capitalisation Over Seven Years

Capitalisation	1998	1999	2000	2001	2002	2003	2004
Top 20 (\$Billion)	325	324	347	399	372	327	430
% of Sample	82%	81%	81%	81%	81%	79%	79%

Model fitting & validation

All the regression models outlined in this dissertation were fitted using the SAS statistics package, where the GENMOD procedure was used as part of model fitting. Output for each model developed is in Appendix B in the following order:

1. SAS output for the given model
2. graph of standardised residuals versus predicted values
3. histogram of standardised residuals.

Next, a model to be used to investigate creative accounting within the sample companies was developed. The first set of models took the form of multiple linear regression with a normal response variable model (an identity link function) while the second set of models developed used a Gamma distribution to model the response variable (with a log link function).

3.4.2 Normal Distribution Models

From a pure statistical point of view, the starting point for choosing a distribution for TACC would be a normal or Gaussian distribution. A normal distribution has the capability to allow the

response variable to take any numerical value (both positive and negative). The form of this model is commonly known as multiple linear regression, where the response variable is assumed to take on a bell-shape probability (Mendenhall et al. 2003). Table 15 lists the models developed to explore the relationships between the control variables (the output for these models is in Appendix B).

Table 15 Normal Distribution Models

Model	Response	Included Factors	Response distribution
1	TACC	Sector + Operating Cash Flow	Normal
2	TACC	Year + Operating Cash Flow	Normal
3	TACC	Large Cap + Operating Cash Flow	Normal
4	TACC	Sector + Large Cap + Operating Cash Flow	Normal
5	TACC	Sector + Year + Operating Cash Flow	Normal
6	TACC	Sector + Large Cap + Year + Operating Cash Flow	Normal

Models 1, 2 and 3 captured the relationship between Total Adjusted Accruals (TACC) and operating cash flow, where this relationship was unchanged for each of the three separate variables: time, sector and size. It appeared that on an individual basis, each of the three control variables had a significant contribution when explaining the relationship between NPAT and Cash flow. The significance of each relationship was contained in the p-value of the chi-squared statistics being approximately equal to zero.

Given each of the control variables have a significant relationship with TACC and Cash flow, next combinations of the three factors were added in order to explain the relationship further. Model 4 output suggested that the large capitalisation effect had disappeared, possibly clouded by the addition of sector. A similar pattern was seen in Model 6 output, where the addition of both sector and year had resulted in size becoming insignificant within the model. Model 5 may have

been the most optimal model in this series, as it showed year and size together were very significant within the model to predict TACC (p-value approximately equal to zero).

Interpreting of the results for models 1–6 suggested the use of parameter values from Model 6 was appropriate to assess the effect of sector, year and size on the likelihood of a company to report larger than average TACC, relative to cash flow. However, all of these regression models failed the test of a normally distributed response variable. A plot of standard residuals vs. predicted TACC for models 1–6 in Appendix B all exhibited a linear downward trend, suggesting that even though individual model factors may be significant, the results need to be used with caution.

3.4.3 Gamma Distribution Models

A close examination of the probability distribution of the response variables for models 1–6 showed the distribution was slightly right-skewed. The inability of the symmetrical normal distribution to adequately capture the right-skewed output from models 1–6 could be overcome using a right-skewed distribution model predict the dependent variable. A Gamma distribution model is right-skewed and hence may be used for this purpose (Table 16 lists 7 Gamma models).

An obstacle to the use of a Gamma distribution model is the inability of the Gamma distribution to model the negative values of the response variable (TACC). That is, the range of response is restricted to positive values only, which would result in eliminating the negative NPAT responses in the sample (the firm years which are losses). Fifty-eight of 497 observations were losses. The low number of losses compared to the high number of profits in the sample was consistent with the findings of Holland and Ramsay (2003). Creative accounting is likely to be more prolific in positive NPAT results, particularly those just above zero where managers have used creative accounting techniques to avoid small losses (Holland and Ramsay 2003 p60).

As our objective was to identify and investigate companies which may be engaged in creative accounting, the elimination of loss years may not have impaired the power of the model. In fact, adopting a gamma model approach may have improved the predictive power when cash flow is a control variable (Coulton et al. 2005 p564). A limitation of this approach is the exclusion of creative accounting used to exacerbate losses in the form of an “Earnings bath”, evidence for which exists in the Australian literature (Wells 2002 p173).

From a practical point of view, it did not affect the ultimate aim of this study to identify companies that over-report profits through creative accounting practices, as it was essentially the positive abnormal level of accounting accruals (i.e. the right hand tail of the distribution) that formed the main concern for this study. Again, the addition and/or combination of time, year and size factors in the models were introduced one at a time as part of the model fitting process. The p-values for each model and for each control variable reflected that all three were significant contributors in describing the relationship between TACC and operating cash flow of a company.

Table 16 Gamma Distribution Models

Model	Response	Included Factors	Response distribution
7	TACC(NPAT>0)	Sector + Operating Cash Flow	Gamma
8	TACC(NPAT>0)	Year + Operating Cash Flow	Gamma
9	TACC(NPAT>0)	Large Cap + Operating Cash Flow	Gamma
10	TACC(NPAT>0)	Sector + Large Cap + Operating Cash Flow	Gamma
11	TACC(NPAT>0)	Sector + Year + Operating Cash Flow	Gamma
12	TACC(NPAT>0)	Large Cap + Year + Operating Cash Flow	Gamma
13	TACC(NPAT>0)	Sector + Large Cap + Year + Operating Cash Flow	Gamma

The use of the gamma as distribution of the response variable appeared to have eliminated the linear downward trend seen in the residuals vs. predicted values plots under the multiple regression models in the previous series (Appendix B). There did appear, however, to be a slight skew of residuals to the right, exemplified by the clustering of residuals at low values of fitted

NPAT. This phenomenon could well be eliminated with inclusion of multi-order and/or interaction terms, and the concept is explored in the findings.

3.4.4 GAP Indexation Model (Model 13)

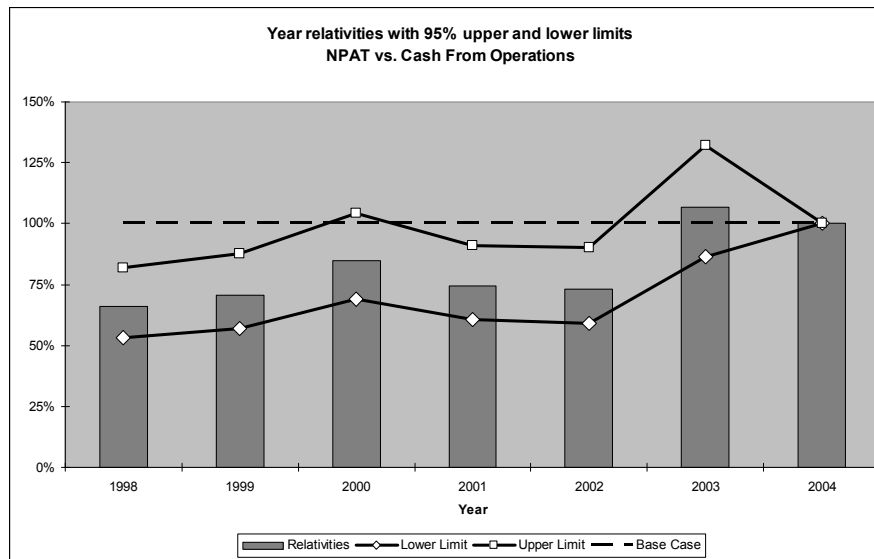
Model 13 incorporated the effect (significant) of all three control variables and the values of parameter estimates can be used to assess the relativities of different levels of time, year and size upon each other. Model 13 is referred to as the GAP Indexation Model as it modelled the gap between NPAT and OpCash indexed to the final year, with the 95% confidence intervals shown over the seven years. The p-values of the GAP Indexation Model control variables reflected that all three were significant contributors in describing the relationship between NPAT and operating cash flow of the sample companies (shown in Table 17).

Table 17 Significance of Sector, Year, and Size in Model

LR Statistics For Type 3 Analysis						
Source	Num DF	Den DF	F Value	Pr > F	Chi-Squared	Pr > ChiSq
Operating Cash Flow	1	426	.	.	.	.
Sector	4	426	23.75	<.0001	95	<.0001
Year	6	426	5.2	<.0001	31.19	<.0001
Size (20 large cap)	1	426	176.28	<.0001	176.28	<.0001

Figure 3 sets out the average yearly Gap relativities for all years of the study. The 95% confidence interval upper and lower bounds are also depicted. Observations which fell outside of the 95% confidence interval were significantly different from the average observations. These outliers may have contained reported results which may have been subject to creative accounting techniques.

Figure 3 A Relativity River For all Years



The swagger of the river may represent a general economic environment or cycle, where the economic conditions affecting the firm are an unpredictable element of the model (Jones 1991; Hribar and Nichols 2007 p1020). The final year, 2004, was used as an appropriate base year as both inflation and company growth would lead to a reasonable expectation that the final year may be the year with the highest numerical difference between NPAT and OpCash.

Utilising the GAP Indexation Model, a four-step process was used to identify likely users of creative accounting:

1. Generate a GAP Indexation Model for each Sector.
2. Identify Outliers outside the 95% confidence intervals.
3. Investigate the firm year and test for Significant NPAT Linearity.
4. Undertake a content analysis of the Outliers' financial report (limited to one case study per super sector in this dissertation) to find any corroborative evidence of creative accounting.

Sector Gap Indexation Models

Sectors 1, 2 and 5 were gathered together to increase the likelihood of correctly identifying significantly different outlying observations. Three separate views of the model may have given the best assistance in identifying the likelihood of a sample company utilising creative accounting techniques to arrive at their reported NPAT. The three views showed Sector 3 (Financials), Sector 4 (Discretionary) and sectors 1, 2 and 5 combined over the seven years.

Identity of Outliers

The predictive capability of the model was reviewed in light of individual company results from the sample which appeared as outliers to the relativity models. Outliers, in this instance, referred to companies which had a larger than expected (or predicted) gap between NPAT and operating cash flow in any one year. The model predicted that the gap between profit and cash should fall within a relativity river across the years the study (1998-2004). Where the gap between the profit and cash was detached from the relativity river, the likelihood of the company engaging in creative accounting practices increased. Clearly all statistical models will have output identifying outliers; the suggestion here was to undertake content analysis to identify any causes that may have existed for identified companies to undertake creative accounting.

NPAT Positive Linearity

Australian companies manage earnings to ensure they report positive profits, sustain growth on the previous year's NPAT or beat benchmarks (Holland and Ramsay 2003 p60; Koh 2003 p113; Hsu and Koh 2005 p813). Where a company NPAT was identified as unusual or abnormal, the firm's financial reports were reviewed in more detail to investigate mitigating evidence which may have resulted in an overstatement of NPAT.

Abnormal NPAT observations were also tested for significant positive linearity of profits over the research period by reviewing the p-value for the goodness of fit line of NPAT over the seven

years for the firm. The positive linearity test corresponded to previous evidence that companies who report positive NPAT growth have a high likelihood of creative accounting (Holland and Ramsay 2003 p60).

Content Analysis (Case Study)

An objective of content analysis is to identify potential underlying issues which may be reported in the financials statements of the Outlier company. The financial reports may provide confirmation by way of supportive or corroborating evidence indicating the company may have engaged in creative accounting.

3.5 Chapter Summary

A summary of the research objectives of this chapter is provided in Table 18.

Table 18 Chapter 3 Data and Methods

Objectives	Outcomes by section number
To introduce the data and methods used in the empirical examination of creative accounting	Section 3.1 builds from the definition of creative accounting ($TACC - NDA = DTACC$ where TACC is total accruals, NDA is the non discretionary or permanent accrual and NTACC is the unexpected or abnormal accrual) identify methods to test for the creative accounting phenomena within a dataset.
To set out the data selection process used to obtain a sample	Section 3.2 outlines the process undertaken to select the 71 firms which were continuously in the

	<p>ASX200 between the seven years 1998 and 2004.</p> <p>The resulting sample of 497 firm years compares favourably against the sample sizes of other contemporary studies in the area of creative accounting.</p>
To examine the methods used to identify creative accounting within financial reports	<p>Section 3.3 examines three methods for detecting the unexpected accruals component of total accruals. The histogram analysis methodology and regression analysis utilising the Jones (1991) model or the modified Jones model. The control variables for the regression analysis are examined in this section.</p>
To develop a model to be used	<p>Section 3.4 develops a model based on the theoretical underpinnings of the literature (i.e. identifying the unexpected accruals by decomposing total accruals). The model developed is a Gamma model with inherent limitations due to its inability to deal with loss years.</p>

The next chapter sets out the findings of the tests and modelling developed in the Data and Methods chapter.

FINDINGS

4.1 Evidence of Creative Accounting

This chapter seeks evidence to establish empirically whether creative accounting is present in annual financial reports of 71 ASX 200 firms in the seven years 1997–2004 (497 firm years). The focus of this dissertation is on total accruals as the source of evidence pointing to the existence of creative accounting. More specifically, this study utilised unexpected changes to total accruals of a firm as a signal that managers of firms may have manipulated discretionary accruals in order to manage earnings (Jones 1991 p206).

The chapter sets out evidence of creative accounting and creative accounting firm events within the sample data in three sections:

1. An analysis of the distribution of reported earnings across the 497 firm years seeks to identify initial evidence suggesting creative accounting may be used by the sample firms to report positive profits (Holland and Ramsey 2003 p53; Coulton et al. 2005 p559).

A histogram provided a cross-sectional view of reported Net Profit after Tax (NPAT). Creative accounting may be detected when a discontinuity of the distribution occurs at zero (Holland and Ramsey 2003). That is, firms with small losses up to zero are arguably likely to adopt creative accounting to improve apparent performance from a small loss result to a positive profit result (Burgstahler and Dichev 1997; Holland and Ramsey 2003 p53; Coulton et al. 2005 p559).

2. Utilising a model developed by Jones (1991) to identify abnormal or unexpected accruals within sample dataset was another approach to determining the persistence of creative accounting or earnings management (Coulton et al. 2005 p561; Davidson et al. 2005 p250; Hsu and Koh 2005; Hribar and Nichols 2007 p1020).

The sample data from 497 firm years were modelled within a time-series regression to estimate an expected or normal level of accruals, with the residuals from the model measuring the abnormal or unexpected discretionary accruals (Hribar and Nichols 2007 p1020). Examining the robustness of the regression model may help determine the significance of the outliers or unexpected accruals. A robust model can more powerfully assist to detection of evidence consistent with creative accounting.

3. Findings from a gamma regression model developed to identify abnormal or unexpected discretionary accruals utilising the definition of an absolute accruals measure provided by Hribar and Collins (2002) are presented in the final section. TACC (total accrual adjustments) was defined as the difference between Net Profit After Tax (NPAT) and Cash flow from operations (CFO).

The predictive capability of the model was examined. Companies identified by the GAP Indexation model (the development of which is discussed in Chapter 3) as being suspected of creative accounting were investigated further. Supporting evidence of creative accounting events was sought from the information contained within financial reports of company to corroborate or refute the claim of creative accounting. However, the evidence obtained from this source was likely to be circumstantial, with only the managers of the firm likely to have definitive evidence of the application of creative accounting practices.

The objective of undertaking these steps was to verify the evidence obtained from the histogram analysis with evidence obtained in the Jones regression model for the 497 firm years. The purpose of building the gamma model was to seek to identify companies which may have engaged in creative accounting. A model that may be used to reliably identify companies engaging in creative accounting or earnings management may be useful to potential users of financial reports. Building a gamma model was an exploratory extension to the creative accounting research elaborated within this dissertation.

4.2 Distribution of Earnings

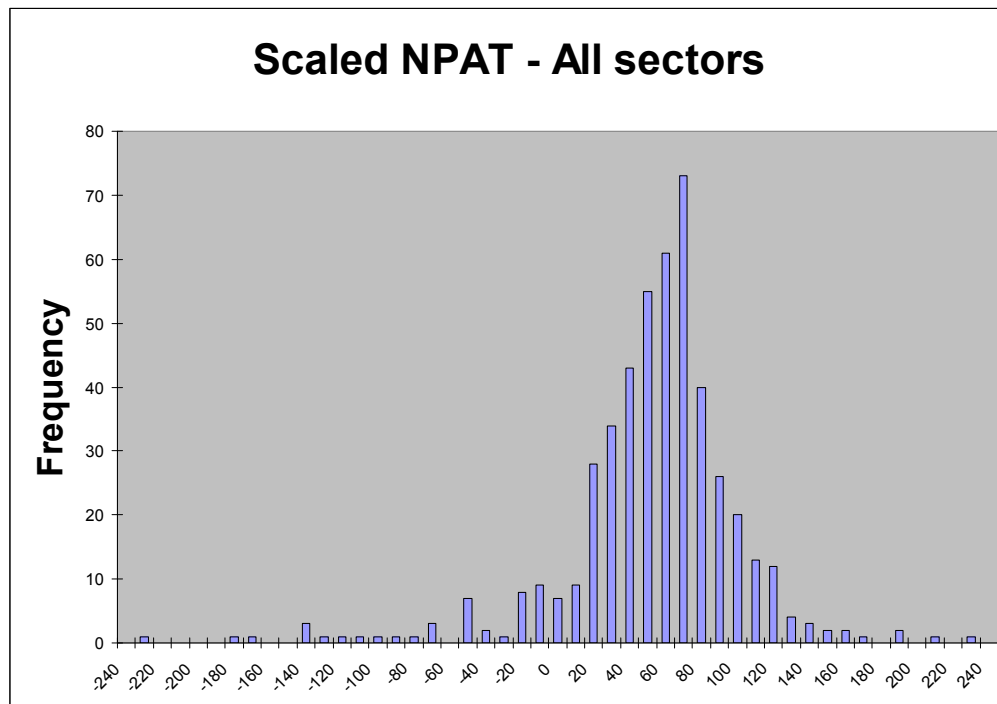
Creative accounting is likely to have a number of characteristics that can be graphically illustrated through the use of histograms (Burgstahler and Dichev 1997; Holland and Ramsey 2003 p47). Companies which have engaged in earnings management are likely to exhibit some or all of the following characteristics:

- Companies report mostly positive Net Profit after Tax (NPAT) (Holland and Ramsey 2003).
- Companies sustain a positive NPAT from one year to the next, represented by a greater number of firms achieving a small positive change in NPAT (as opposed to negative changes). Changes to profits from one year to the next are more likely to be small positive changes to prior years representing linear incremental growth in profit year on year (otherwise referred to as benchmark beating) (Hsu and Koh 2005).
- Companies show an abnormally low number of small losses, where the creative manager avoids earnings decreases or negative earnings by increasing a small negative profit to a small positive profit through creative accounting techniques (Holland and Ramsey 2003).

A histogram to graphically represent the cross-sectional distribution of NPAT for the sample is utilised by Coulton et al. (2005), Burgstahler and Dichev (1997) and Holland and Ramsey (2003). Identifying lower frequencies of small losses just below zero and higher than expected frequencies of gains just above zero indicates that earnings management or creative accounting may be present within the sample.

Figure 4 is a histogram of Net Profit after Tax (NPAT) for the 497 firm years (71 ASX 200 firms through the years 1998 to 2004) scaled by market value (Coulton et al. 2005 p559). The output for the following histogram analysis is in Appendix B.

Figure 4 Histogram of Distribution of NPAT (total sample)



The histogram shows a single peaked, bell shaped distribution which is relatively smooth with the exception of an abnormality in the region of zero NPAT. Negative earnings occur in a more disjointed manner than those which are positive earnings.

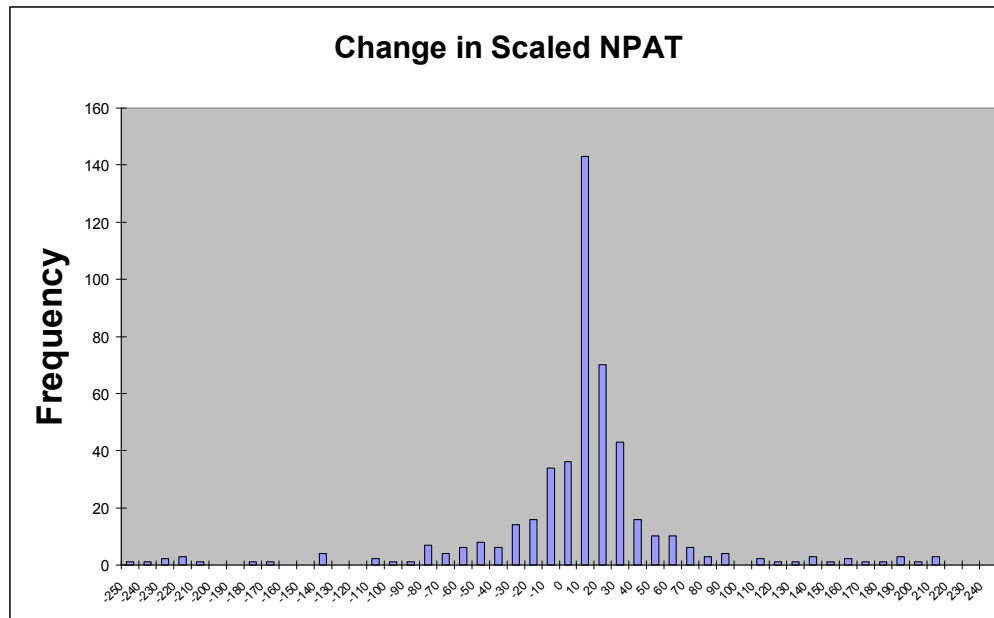
Most companies reported positive Net Profit after Tax (88.3% of the sample). Figure 5 also shows a greater number of firms achieving small positive NPAT than small negative NPAT as shown by the low frequency of NPAT before and after zero on Figure 4. There are 143 firm years in the first interval after zero, compared with 34 firm years in the first interval before zero. The negative skewness of -9.363 for the distribution may suggest negative profits were being avoided. These findings are in line with similar studies which confirmed the firms within the sample engaged in creative accounting activity (Burgstahler and Dichev 1997; Holland and Ramsey 2003; Coulton et al. 2005).

On inspection, the histogram shows fewer observations at or just below zero, with an increased number of observations just above zero. The smoothness assumption of the distribution is visually interrupted at the point of small negative profits, whilst observations of profits just above zero also depict a higher than expected number of observations. The significance of the abnormality at zero is supported by the descriptive test statistics. That is, the standardised difference between the interval immediately to the left of zero is -9.363, supporting a view the irregularity around zero is statistically significant. The test statistic for a given interval is the difference between the actual and expected frequency in that interval divided by the estimated standard deviation of the difference, expected to be normally distributed (Coulton et al. 2005 p560).

The discontinuity at zero within the histogram of NPAT suggests sample firms had managed their earnings to report positive profits, supporting similar findings in the United States (Burgstahler

and Dichev 1997), but particularly the findings of other Australian studies (Holland and Ramsey 2003 p53; Coulton et al. 2005 p559). Similarly, this pattern can be seen in the histogram of changes in NPAT from year to year as shown in Figure 5.

Figure 5 Histogram of Distribution of NPAT (total sample)

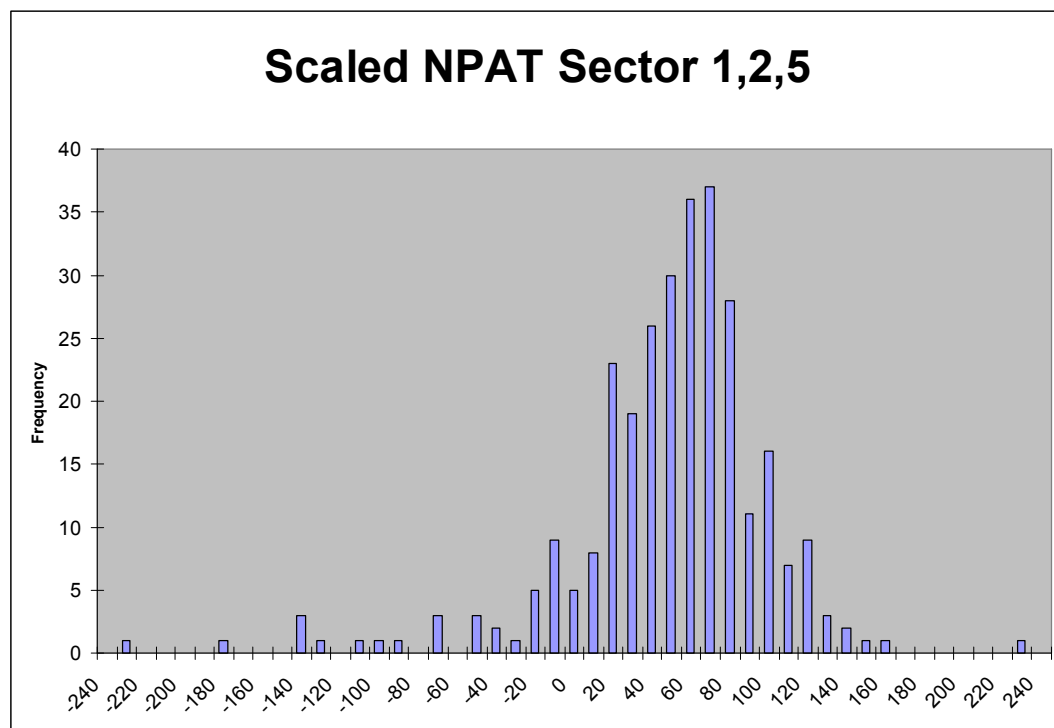


The high level frequency of small positive changes to NPAT within the sample strengthens the evidence that creative accounting existed within the 497 firm years under investigation. The increased frequency just above zero (143 observation or 28.8% of all observations in the first interval) for small positive changes to NPAT year on year provides evidence that many firms in the sample had obtained linear incremental growth in profit year on year, supporting the evidence of benchmark beating of Hsu and Koh (2005). Examining for a discontinuity at zero within smaller segments of the sample, the following is a review of the separate histograms of NPAT for each of the three super sectors identified in the data and methods chapter: sectors 1, 2 and 5 (Consumer Staples, Information Technology, Materials, Industrials, Property Trust, Utility, Health

Care and Energy), Sector 3 (Financials) and Sector 4 (Consumer Discretionary and Telecommunications).

Figure 6 is a histogram of Net Profit after Tax (NPAT) for the 308 firm years (44 Consumer Staples, Information Technology, Materials, Industrials, Property Trust, Utility, Health Care and Energy firms through the years 1998 to 2004) scaled by market value.

Figure 6 Histogram of Distribution of NPAT (Sectors 1,2 and 5)



Unsurprisingly, the histogram of the largest super sector, representing 62% of the overall sample, shows the similar low level of observations at or just below zero, with an increased number of observations just above zero. Most companies reported positive Net Profit after Tax (85.7% of the sample).

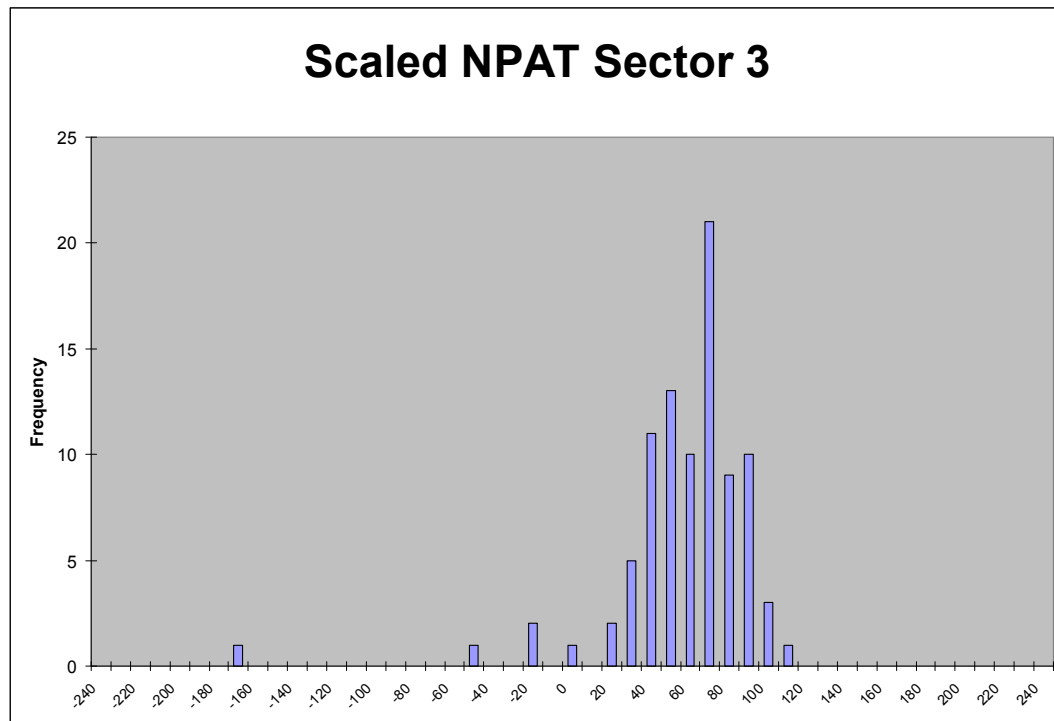
The Histogram for sectors 1, 2 and 5 combined (shown in Figure 6) contains a greater number of firms achieving small positive NPAT than small negative NPAT. There were eight firm years in the first interval after zero (31 in the first two intervals), compared with nine firm years in the first interval before zero (14 in the first two intervals).

The observations of the interval immediately before and immediately after zero up to the first interval are less clear than for the entire sample of 497 firm years. The weight of observations supporting the increased number of small positive NPAT compared with small negative NPAT is clearer when the two intervals immediately before and immediately after zero are taken together. The negative skewness of Figure 7 of -8.844 for the distribution suggests negative profits were being avoided.

The interruption at zero of the smoothness assumption is more pronounced than the overall sample highlighting a discontinuity at zero within the histogram of NPAT. The evidence is clearer in this sector that the histogram of the entire sample above and suggests firms within sectors 1, 2 and 5 had engaged in creative accounting to report positive profits.

Figure 7 is a histogram of Net Profit after Tax (NAPT) for the 91 firm years (13 Financials firms through the years 1998 to 2004) scaled by market value.

Figure 7 Histogram of Distribution of NPAT (Sector 3 - Financials)



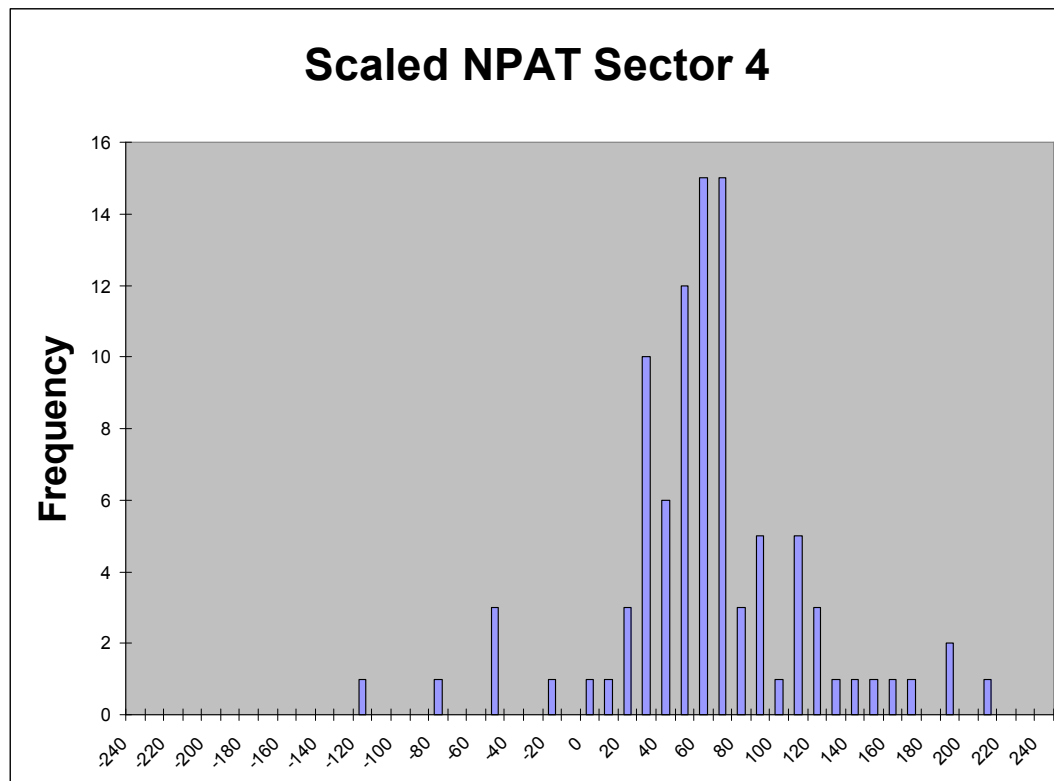
Most Sector 3 (Financials) companies reported a positive net profit after tax (93.4% of the sample). Clearly a greater number of firms achieved small positive NPAT than small negative NPAT. There was only one firm year in the first interval after zero, compared with zero firm years in the first interval before zero. The negative skewness of -7.727 for the distribution may suggest negative profits were being avoided, although with such strong performance the real benchmark may not be zero but a higher benchmark that financial companies were attempting to beat.

Visually, the histogram in Figure 7 shows fewer observations at or just below zero for the financial sector as well, with almost all of the observations above zero (the highest concentration of positive profit for all sectors). The discontinuity of the financial sector is both at zero and at the median and may suggest firms within this sector had managed earnings to report positive profits and to beat market expectations of profit within the sector. The smoothness of the distribution is interrupted at around the median NPAT of \$57.1 million (scaled for firm size) and displays an unintegrated negative tail, whilst observations of profits just above the median show a higher than expected number of observations.

The final figure in this section is a histogram of Net Profit after Tax (NPAT) for the 98 firm years (14 Consumer Discretionary and Telecommunications firms through the years 1998 to 2004) scaled by market value.

The Sector 4 histogram (Figure 8) again shows fewer observations at or just below zero, and also has a high level of observations above zero: 91.8%. The companies in the Consumer Discretionary sector mostly reported positive Net Profit after Tax during the period 1998 to 2004. Figure 8 also shows a greater number of firms achieving small positive NPAT than small negative NPAT. There are a paucity of observations around zero for three intervals either side of zero. There are 15 firm years in the first four intervals after zero, compared with one firm year in the first four intervals before zero. The negative skewness of -0.923 for the distribution at the first interval is statistical conformation of the limited number of observations around zero.

Figure 8 Histogram of Distribution of NPAT (Sector 4 - Consumer Discretionary)



The smoothness of the distribution, like the financials sector, is also at around the median NPAT (\$56.9 million scaled for firm size) and there is a paucity of negative profits, whilst observations of positive profits just above zero and just above the median show a higher than expected number of observations. These discontinuities suggest firms within this sector had managed earnings to report positive profits and to beat market expectations of profit within the sector.

Sectors 3 and 4 are represented by larger firms which were, on average, profitable with a smaller standard deviation of reported earnings when compared with smaller firms (shown in the descriptive statistics summarised in Table 19). The table depicts the characteristics of the sample as a whole and the three sectors being investigated.

Table 19 Descriptive Statistics

Scaled NPAT	N	Mean (\$ mil)	Std Dev	Q1 25%	Median 50%	Q3 75%	% Positive
Total	497	41.228	157.075	28.159	53.405	72.171	88.3%
Sector 1,2 & 5	308	34.558	185.137	20.483	50.333	72.066	85.7%
Sector 3	91	42.628	94.703	38.528	57.079	71.170	93.4%
Sector 4	98	60.888	93.947	37.534	56.895	80.249	91.8%

The above histogram analysis indicate that there is some evidence to suggest the companies within the 497 firm years had engaged in some form of creative accounting to consistently obtain positive NPAT whilst avoiding negative NPAT. The findings are analogous to those of Holland and Ramsey (2003 p54) and Coulton et al. (2005 p560), who found that Australian firms are able to and do manage earnings to report positive profits.

A limitation of the histogram analysis above is the small sample sizes, 497 firm years for the total sample and less for the super sector sample sizes. Other Australian studies analysing the distribution of NPAT had significantly larger sample sizes (Holland and Ramsey 2003 sample size of 2,433 firm years; Coulton et al. 2005 sample size of 2,906 firm years).

4.3 Unexpected Accruals (Jones Model)

The focus of this dissertation is on total accruals as the source of creative accounting. More specifically, this study utilises unexpected changes to total accruals of a firm as a signal that managers of firms may have manipulated discretionary accruals in order to manage earnings (Jones 1991 p206).

The Jones regression model approach to identifying discretionary accruals has become another accepted method of detecting creative accounting (Davidson et al. 2005 p250; Hsu and Koh 2005

p813; Hribar and Nichols 2007 p1020). The Jones method uses a time-series model to estimate an expected or normal level of accruals, then uses the residuals as a measure of the discretionary accruals (Hribar and Nichols 2007 p1020). The model developed by Jones (1991) seeks to identify abnormal or unexpected accruals and is expressed as follows:

$$TACC = \alpha + \beta_1(\Delta Revenue) + \beta_2(Property, Plant and Equipment) + \varepsilon$$

Firm characteristics controlled for as independent variables in the model are: $\Delta Revenue$ (Change in Revenue from the previous year), PPE (Property, plant and equipment), Sector 4 (Consumer Discretionary was used as the base sector) and Year (2004 was utilised as the base year) (Davidson et al. 2005 p250; Hsu and Koh 2005 p813; Herbohn and Ragunathan 2008). Market capitalisation was employed to control for firm size in place of Total Assets (Davidson et al. 2005 p250; Hsu and Koh 2005 p813; Herbohn and Ragunathan 2008).

Five of the 12 control variables identified in the data and methods chapter were used in the model. The others were excluded as they were not a focus for this dissertation and may have only added noise to the residual plotting as suggested by Hribar and Nichols (2007 p1021): lagged income effect, leverage, working capital ratio, substantial shareholding, extreme performance, auditor quality, managerial ownership and lagged accrual effect.

The dependent variable TACC was redefined utilising Cash Flows from Operations as the surrogate for the non accrual activity of the firm instead of the change in working capital represented by a change in receivables of the modified Jones model (Hribar and Collins 2002 p109). Therefore the TACC is also expressed as:

$$TACC = OI - CFO \quad (\text{Coulton and Taylor 2004 p561})$$

or

$$TACC = NPAT - CFO$$

NPAT (Net Profit after Tax) was substituted for OI (earnings before extraordinary items and discontinued operations) in the Jones regression model below. The objective of the model was to identify the propensity of a specific firm or group of firms to be more likely to engage in aggressive creative accounting practices (Koh 2003; Hsu and Kho 2005; Davidson et al. 2007; Herbohn and Rangunathan 2008). The Jones regression model facilitated an estimate of “normal” accruals, and the residual, ε , was interpreted as the discretionary or abnormal accruals. The null hypothesis for this framework was no evidence of creative accounting. The table of definitions (Table 20) summarises the variables used within the Jones regression model.

Table 20 Variable Definitions

Variable	Variable description	Definition
CFO	Cash flows from operations	Cash flows from operations divided by total assets at time t
DACC	Discretionary Accruals	Total Accruals (TACC) less Non Discretionary accruals (NDACC); also know as the unexpected or abnormal accruals component
NDACC	Non-Discretionary Earnings	Earnings less discretionary accruals (DACC) at time t
NPAT	Net Profit after Tax	Net Profit after tax reported in each year 1998 to 2004
SECTOR	Industry Sector	Grouping of industry sectors set out in data and methods
TA	Firm size	The market capitalisation of the firm (have not used total assets)
TACC	Total Accruals	Net profit after tax less cash flows from operations at time t scaled by the market capitalisation of the firm
YEAR	Year Variable	A series of dummy variables with a value of 1 to year t, 0 otherwise

The Jones regression model was applied to the 497 firm years to estimate the dependent variable TACC (NPAT – CFO). Descriptive statistics for the model are in Table 21.

Table 21 Descriptive Statistics for the Jones Regression Model

Source	DF	F Value	Pr > F	R-Squared	Coeff Var	Root MSE	TACC Mean
Model	10	26.62	<.0001	0.3539	14,694.290	139,870,000,000	951,863,590
Error	486						
Corrected Total	496						

The model F value of 26.62 has a statistical significance of <0.0001, indicating the independent variables were significantly different from zero, evidence that these variables contributed to explaining components of TACC. The Spearman and Pearson Correlation Matrix (Table 22) also shows a good spread of predictors within the model.

Table 22 Spearman and Pearson Correlation Matrix for explanatory variables (n=497)

	Year 1998	Year 1999	Year 2000	Year 2001	Year 2002	Year 2003	Other Sector1,2&5	Financials Sector 3	Δ Revenue	PP&E
1998	1	0.429	0.434	0.449	0.437	0.425	0.091	0.077	-0.035	0.025
1999	0.429	1	0.444	0.451	0.446	0.427	0.107	0.115	-0.139	0.100
2000	0.434	0.444	1	0.461	0.458	0.437	0.045	0.036	-0.133	0.021
2001	0.449	0.451	0.461	1	0.469	0.454	0.013	0.012	-0.062	0.004
2002	0.437	0.446	0.458	0.469	1	0.446	-0.003	-0.015	-0.130	-0.007
2003	0.425	0.427	0.437	0.454	0.446	1	-0.001	-0.005	-0.039	0.033
Sec 1,2&5	0.091	0.107	0.045	0.0131	-0.003	-0.001	1	0.659	-0.002	0.377
Sector 3	0.077	0.115	0.036	0.0128	-0.015	-0.005	0.659	1	-0.038	0.631
Δ Rev	-0.035	-0.139	-0.133	-0.062	-0.130	-0.039	-0.002	-0.038	1	-0.065
PP&E	0.025	0.100	0.021	0.004	-0.007	0.033	0.377	0.631	-0.065	1

The correlation coefficients of within the Spearman and Pearson Matrix show no evidence of strong correlations between the predictive independent variables. With the exception of the

relationship between Sector 3 (Financials) and PPE, all of the correlations within the matrix were below 0.500, indicating the values had significant correlations which may have limited the robustness of the model.

The relationship between Sector 3 (Financials) and PPE is not strong and may be a function of much of this sector having zero or very little Property Plant and Equipment in their balance sheets. A limitation, however, is the implicit assumption that revenues are nondiscretionary, which is unlikely as managers may accrue abnormal revenue (debtors) in any year to manage earnings (Dechow et al. 1995 p199).

The Jones regression model predicts a value for TACC, the difference between the predicted value and the actual value is the residual error or “ ϵ ”. The residual error is the component of TACC which is unexpected or abnormal. Taking the absolute value of the residual results in an unsigned measure of creative accounting, and the propensity of the firm to manipulate earnings may be identified (where the mean of the absolute discretionary accruals is defined by the standard deviation of the distribution of signed discretionary accruals) (Hribar and Nichols 2007). The top 10 Standardised Pierson Residuals (a potential surrogate for the standard deviation of the distribution of signed discretionary accruals) are set out in Table 23.

Table 23 Largest Identified Discretionary Accruals (497 firm years)

		Sector	Firm	Year
1	NCP	Consumer Discretionary	News Corporation (NWS) formerly NCP	2002
2	WBC	Financials	Westpac Banking Corporation (WBC)	2003
3	NAB	Financials	National Australia Bank Limited (NAB)	2002
4	WBC	Financials	Westpac Banking Corporation (WBC)	2004
5	ANZ	Financials	ANZ Banking Group Ltd (ANZ)	2004
6	RIO	Materials	Rio Tinto Limited (RIO)	1998
7	ANZ	Financials	ANZ Banking Group Ltd (ANZ)	2003
8	NAB	Financials	National Australia Bank Limited (NAB)	2004
9	WBC	Financials	Westpac Banking Corporation (WBC)	2001
10	NCP	Consumer Discretionary	News Corporation (NWS) formerly NCP	2004

Hribar and Nichols (2007) identified that not controlling for economic characteristics of the firm generates a higher risk of incorrectly rejecting the null hypothesis, and identifying firm characteristics that may be associated with a lack of fit when using unsigned models may lead to an increase in the robustness of the tests (p1020). The Jones model fitted to the 497 firm years had a poor R-squared of 0.3539, suggesting that the model was not very robust (a score of 0.70+ would indicate a more robust model). However, the result obtained above was substantially stronger than that obtained by Coulton et al. (2005) (Adjusted R-squared of 0.016).

The version of the Jones regression model above was scaled for market capitalisation by firm to help control for the economic characteristics of the firm as opposed to total assets used by Jones (1991). However, the model did not identify individual firm characteristics nor did it test discrete industries to assist mitigate measurement error in discretionary accruals by removing the variation in nondiscretionary accruals that are common across firms in the same industry (Dechow et al. 1995 p200). The Jones model, as applied to the sample of 497 firm years, did not provide strong evidence that creative accounting existed, due to its statistical predictive limitations described above.

The development of sector models in the next section assisted to decrease the measurement error in TACC and more probably DACC by isolating some of the variation in the nondiscretionary accruals of the sector.

4.4 Further Analysis

The Gamma distribution model developed in the data and methods chapter was used to explore the data (497 firm years). The model titled the GAP Indexation Model (or Model 13) was right-skewed and may have been more suitable for identifying creative accounting. A gamma model that includes only positive profits is likely to include firms utilising creative accounting to produce

positive NPAT results (particularly NPAT results just above zero where managers have used creative accounting techniques to avoid small losses) (Holland and Ramsay 2003 p60).

A limitation of the Gamma distribution model was the inability of the model to incorporate negative values of the response variable (TACC). That is, the range of response was restricted to positive values only, which resulted in eliminating the firm years which were losses from the sample (i.e. 58 of 497 observations).

The theoretical base for discovering and observing unexpected changes in total accruals remains grounded in the absolute accruals model of Hribar and Collins (2002). The independent variables in the model were: market capitalisation, sector and year (Davidson et al. 2005 p250; Hsu and Koh 2005 p813; Herbohn and Rangunathan 2008). Again, only five of the 12 control variables identified in the data and methods chapter were used in the model as the others (lagged income effect, leverage, working capital ratio, substantial shareholding, extreme performance, auditor quality, managerial ownership and lagged accrual effect) may have only added noise (Hribar and Nichols 2007 p1021).

Similar to the treatment of TACC in the section above, the dependent variable was defined as:

$$\text{TACC} = \text{NPAT} - \text{CFO}$$

NPAT (Net Profit after Tax) was substituted for OI (earnings before extraordinary items and discontinued operations) for the same reasons it was substituted in the Jones regression model in section 4.3 above.

The objective of the model remained the same: to identify the propensity of a specific firm or group of firms more likely to engage in aggressive creative accounting practices (Koh 2003; Hsu and Kho 2005; Davidson et al. 2007; Herbohn and Ragunathan 2008).

The gamma model had a goodness of fit chi-squared measure of 491.64 or a p-value of 0.0152, indicating that a significant level of relationships were explained within the model. The model included 426 firm years in the dataset, derived from the 497 firm years of the original 71 sample companies over seven years less the firm years which were losses.

The p-values reflect the relationships between the five sectors and show that sectors 3 (Financials) and 4 (Discretionary) had significant contributions to explaining the model (Table 24). The relationships between 1 vs. 5 and 2 vs. 5 seemed to have less, if any, additional explanatory power.

Table 24 Significance of Sector vs. Sector in Model

Comparison	Relativity	P-value	Significance at 1%
1 vs. 2	171.5%	<.0001	Yes
1 vs. 3	304.0%	<.0001	Yes
1 vs. 4	233.4%	<.0001	Yes
1 vs. 5	126.9%	0.1223	No
2 vs. 3	177.3%	<.0001	Yes
2 vs. 4	136.1%	0.0015	Yes
2 vs. 5	74.0%	0.0194	No
3 vs. 4	76.8%	0.0068	Yes
3 vs. 5	41.7%	<.0001	Yes
4 vs. 5	54.4%	<.0001	Yes

The p-values for each model and for each control variable reflect that all three were significant contributors in describing the relationship between TACC and operating cash flow of a company.

This section presents the findings of the gamma regression model with the three independent variables of Sector, Size and Year. The predictive capability of the model is reviewed in light of individual company results from the sample which appear as outliers to the relativity models. Outliers, in this instance, refer to companies which had abnormal or unexpected accruals (the gap between NPAT and CFO in any one year).

The findings are set out within the three sectors identified above:

1. Sectors 1, 2 and 5 – Consumer Staples, Information Technology, Materials, Industrials, Property Trust, Utility, Health Care and Energy
2. Sector 3 – Financials
3. Sector 4 – Consumer Discretionary and Telecommunications.

As most Australian studies have not undertaken sector analysis for creative accounting (Koh 2003 p115; Davidson et al. 2005 p250; Hsu and Koh 2005 p814; Herbohn and Rangunathan 2008 p585), this exploitative analysis may identify differences between the three major sector grouping set out above.

To compare and contrast sectors may assist, even help direct, further work into creative accounting and may highlight sectors which exhibit a higher level of creative accounting than others.

This dissertation also seeks to review the Financials sector as little is known of the appetite for creative accounting techniques within this sector (Wells 2002 p175; Koh 2003 p116; Holland 2003 p50; Coulton 2005 p558; Davidson et al. 2007 p249; Herbohn and Rangunathan 2008 p581).

A four step process was applied to identify likely users of creative accounting:

1. Generate the relativity river for the Sector.

The model predicts that the TACC should fall within the upper and lower limits of a 95% confidence interval. An analogy is drawn between the upper and lower limits of TACC over the years being similar to the left and right bank of a river travelling across time, where TACC is bound by the river banks (upper and lower limits at 95% confidence level). The result is a relativity river across the years the study (1998–2004) for each super sector.

2. Identify outliers which fall outside of the river.

Where TACC (the difference between the NPAT and cash flow) is detached from the relativity river for each super sector, that is the predicted value of total accruals is significantly different from the actual TACC, then the residual, ϵ , is interpreted as an abnormal accrual. A heightened possibility the company is engaged in creative accounting practices increases when the residual, ϵ , falls outside of the sector river. For the purpose of this dissertation, one company per super sector was used as a case study when more than one outlier company could be identified.

3. Review the outlier firm's reported NPAT for significant linearity.

Positive linearity corresponds to evidence that companies reporting progressively improving positive NPAT have a higher possibility of creative accounting (Holland and Ramsay 2003 p60). NPAT of each company selected for case analysis was plotted for each year (1998–2004), a line of best fit was determined and the significance and direction

of the line were reviewed. Signs of significant linearity and a positive NPAT best fit slope are consistent with the potential presence of creative accounting.

4. Review the annual reports of the firm for corroborative evidence that may indicate creative accounting.

As all statistical models will have output identifying outliers, a content analysis of the relevant years' financial reports was undertaken for each company selected from case analysis. The objective of the content analysis was to identify any potential underlying issues which may have been reported in the financials statements, providing supportive corroborating evidence for case study companies which may have caused them to engage in creative accounting.

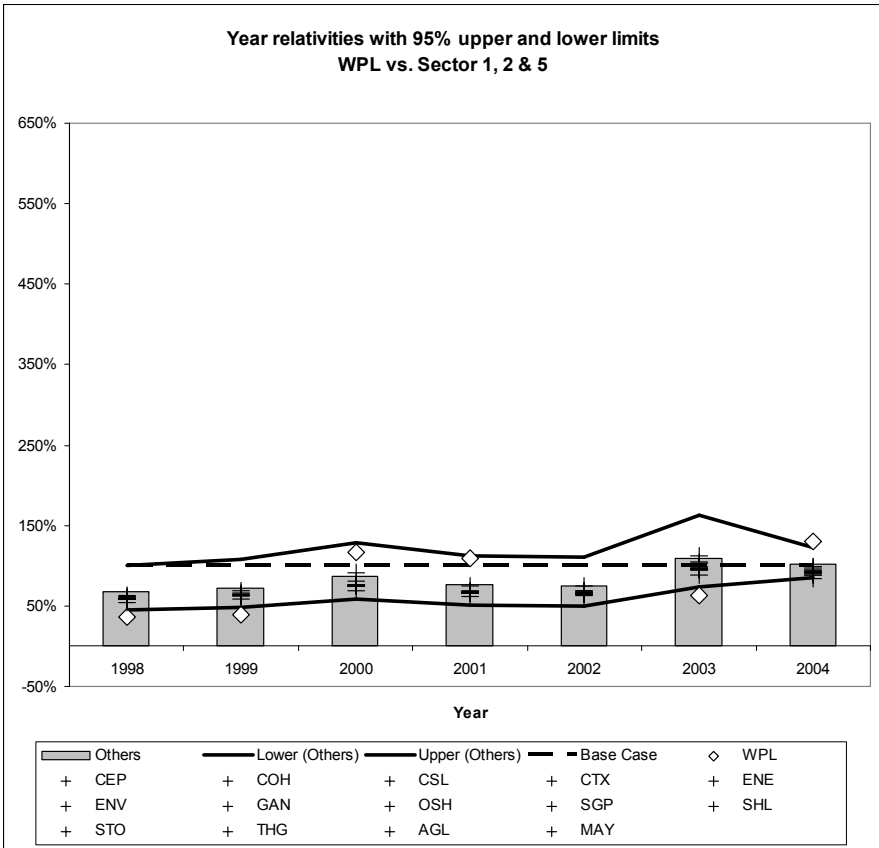
4.4.1 Sectors 1, 2 & 5

The first super sector combined sectors 1, 2 and 5 - Consumer Staples, Information Technology, Materials, Industrials, Property Trust, Utility and Health Care and Energy.

Step 1: The relativity river for sectors 1, 2 & 5 was, on average, 65% narrower than the Sector 3 river and 57% narrower than the Sector 4 river. This was in contrast to the diversity of industries that make up this particular super sector.

The narrower bands at 95% confidence for this sector may be an indication that the two other sectors, the financials sector and the consumer discretionary sector, have more discretionary accrual scope and thereby more opportunity for creative accounting (represented by a greater standard deviation from the mean error). The relativity river for the super sector 1, 2 and 5 is shown in Figure 9.

Figure 9 Relativity River for Sectors 1, 2 & 5



Step 2: Identify a company from the super sector (sectors 1, 2 & 5) which has observations which are outside of the relative river for this sector. Woodside Petroleum (◆ WPL) is a company identified as having observations outside of the 95% confidence upper and lower limits. The observations of TACC where the residual outliers for Woodside fell outside the 95% boundaries were years 1998, 1999 and 2003 years (nine, eight and 10 points below the Lower Confidence level for the corresponding years).

The gamma distribution model excluded the 2002 observation (one of the 58 negative NPAT reported by the sample companies, not included in the model). The other three energy companies included in the model, Caltex, Santos and Oil Search, did not record any losses in the period 1998

to 2004. Woodside's loss in 2002 of \$92 million was a significant departure from an otherwise profitable period.

Step 3 was to review the outlier company's reported NPAT for significant linearity. Table 25 shows the reported NPAT for Woodside Petroleum across the research period (including the negative result of 2002).

Woodside recorded three gaps underneath the lower limit of the super sector relativity river (gamma model). The marginal deviation from the 95% lower confidence level does not appear significant and suggests little of the likelihood of Woodside utilising creative accounting techniques.

Table 25 Woodside Petroleum Reported Results (\$mil)

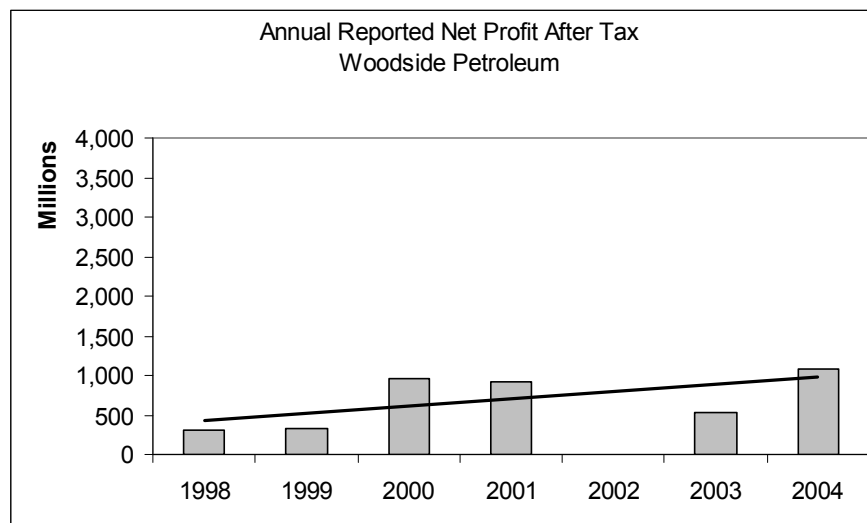
WPL	1998	1999	2000	2001	2002	2003	2004
NPAT	300	331	967	910	(92)	527	1,084
OpCash	394	555	1,516	1,108	1,207	1,203	1,318
TACC	(224)	(550)	(199)	(1,299)	(676)	(234)	(607)

When a best fit line was added to a graph of the Woodside Petroleum NPAT for 1998–2004 (excluding the loss of 2002), upward linearity is observed (shown in Figure 10). The upward slope of the line is consistent with benchmark beating behaviour, where a firm beats the previous reported profit (Hsu and Koh 2005).

The line of best fit has a p-value of 0.1761 (t statistic is -1.5749) which is semi-strong evidence, weakened by the small number of observations and the loss of one observation year. Woodside's NPAT in Figure 10 appears to have a constant upward trend (when the 2002 result is excluded).

Positive linearity corresponds to evidence that Woodside may have been reporting positive NPAT growth with a higher likelihood of creative accounting (Holland and Ramsay 2003 p60).

Figure 10 Woodside Petroleum Reported NPAT



Step 4: The financial reports for the Woodside Petroleum during the period 1998 to 2004 reveal some separate characteristics distinct from most listed companies in the sample and a significant event (Table 26).

Table 26 Content Analysis of Woodside Financial Statements

Year	Summaries and Extracts from Annual Reports
	Woodside Petroleum, as a mining company, has a significant level of depreciation and amortisation within the NPAT. A product of an established natural gas supplier requiring a large infrastructure which is depreciated over an extended time.
2002	Woodside adopted a new accounting policy for exploration, evaluation and development. As a consequence of the change in accounting policy the 2002 opening retained earnings was reduced by 36.5% from \$1.764 billion to \$1.120 billion.

Source: annual reports for the Woodside Petroleum 1998 - 2004

Depreciation and amortisation as a percentage of profit before tax was greater than 27% for six of the seven years and as a percentage of profit after tax was greater than 40% for six of the seven years. Table 27 sets out the significant effect depreciation and amortisation had on the accounts of Woodside.

Table 27 Woodside Depreciation and Amortisation

Depreciation & Amortisation							
	1998	1999	2000	2001	2002	2003	2004
Depr & Amort (\$000)	153,781	136,935	390,233	343,692	275,813	223,118	263,549
% of Underlying sales	15%	13%	16%	14%	12%	11%	12%
% of Profit b Tax	33%	36%	28%	27%	407%	27%	18%
% of Profit a Tax	51%	41%	40%	38%	-300%	42%	24%

A high level of non cash expenses (depreciation and amortisation) reduces the variability other accounting adjustments may have on determining profit other than to use a changed depreciation method. Eliminating the effective use of other creative accounting techniques through sheer size of depreciation and amortisation as recorded by Woodside may have led to a lower than expected TACC (gap between profit after tax and cash from operations identified in Figure 9 above).

The financial statements for 2002 for Woodside contained a significant event. Woodside adopted a new accounting policy for exploration, evaluation and development. This change in accounting method was a significant change in the direction of a more conservative accounting practice approach. The only year Woodside reported a loss during the seven years observed was 2002.

Sectors 1, 2 & 5 Summary: The four-step process adopted in this dissertation set out to identify likely users of creative accounting by super sector. Sectors 1, 2 & 5 (first of three super sectors) produced a relativity river which had narrower bands at 95% confidence when compared with the

two other sectors (financials and consumer discretionary considered below), which may indicate comparatively less discretionary accrual scope and thereby less opportunity for creative accounting within this super sector.

Woodside was selected as the case study because of three residual outliers identified which were outside the relative river (95% confidence intervals) for this super sector. The NPAT years 1998, 1999 and 2003 years were nine, eight and 10 points below the lower confidence level for the respective years. A positive slope of the NPAT best fit line with a corresponding p-value of 0.1761 (t statistic is -1.5749) is semi-strong evidence Woodside's NPAT may have had elements of creative accounting supported by the positive linearity test of Holland and Ramsay (2003 p60) and is consistent with benchmark beating behaviour described by Hsu and Koh (2005).

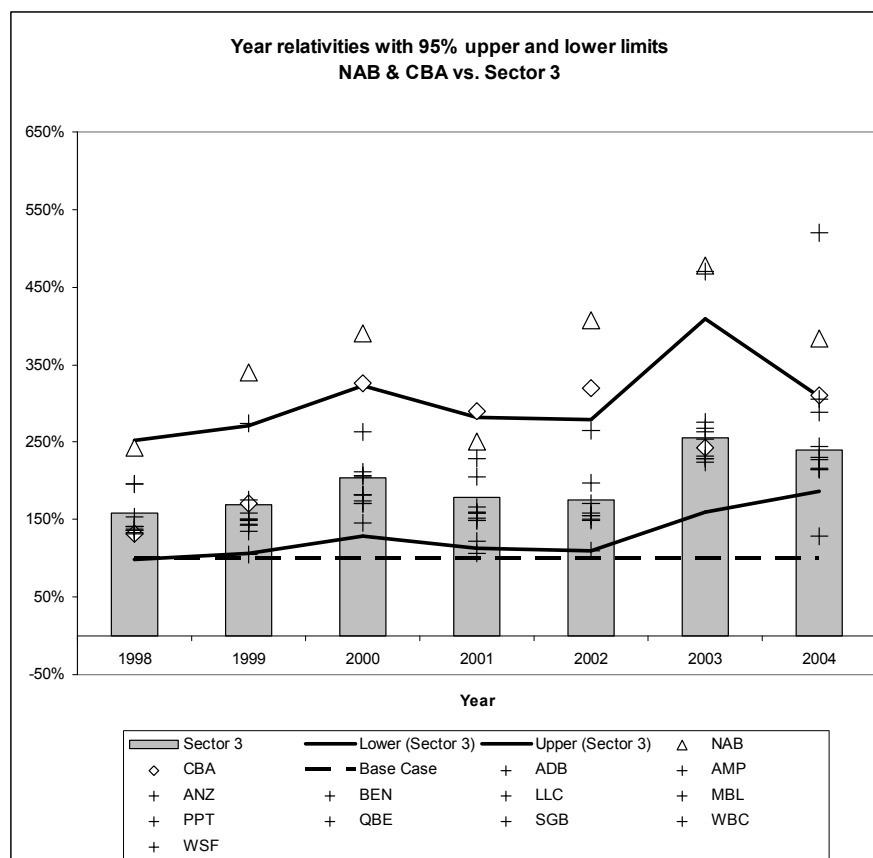
Corroborative evidence consistent with Woodside financial statements containing a potential of creative accounting is found in the annual reports, particularly in 2002. In that year a change of accounting method was adopted by the company. Changes to accounting method, in Woodside's case, changes to its accounting policy for exploration, evaluation and development, were identified as a potential creative accounting technique in the literature (Mulford and Comiskey 2002 p48; Shilit 2002 p123; Dellaportas 2005 p176).

4.4.2 Sector 3 (Financials)

Step 1: Sector 3 is a super sector containing only Financials. Eight Australian banks (NAB, ANZ, Westpac, CBA, St George, Macquarie Bank Adelaide and Bendigo) were included in the sector, along with three insurers (QBE, Perpetual and AMP) and two others (Lend Lease and Westfield Holdings).

The relativity river for Sector 3 was the widest of the three super sectors. Wider bands at 95% confidence for this sector may be an indication that it had the most discretionary accrual scope and the most opportunity for creative accounting of the three super sectors (represented by a greater standard deviation from the mean error). The relativity river, within which 95% of observations of TACC fell, is shown in Figure 1.

Figure 11 Relativity River for Sector 3



Step 2 was to identify a company from the financials sector which, when plotted against the relativity river, had observations of TACC outside of the sector river. A company identified in the figure above was the National Australia Bank (△ NAB), particularly for the 2002 year, 128 points

above the upper confidence limit. NAB's NPAT for 2003 was also outside the sector river at a level of 477%, 68 points above the Upper Confidence level.

The super sector containing only financial companies included in the gamma model were the most profitable companies by NPAT value and the most consistently profitable measured by the number of positive NPAT observations when compared with the other super sectors. Whilst this observation is consistent with the period, where Australian companies experienced generally favourable economic conditions from 1998 to 2004 (a period when the Australian economy did not experience a recession), it highlights the profitable nature of the financial sector during this time.

Step 3 was to review the outlier company's reported NPAT for significant linearity. Table 28 shows the reported NPAT for the NAB across the research period. There is a noticeable constant upward trend in NPAT with the exception of 2001, where a reduction in NPAT of 35.6% was reported, and a slight dip in 2004.

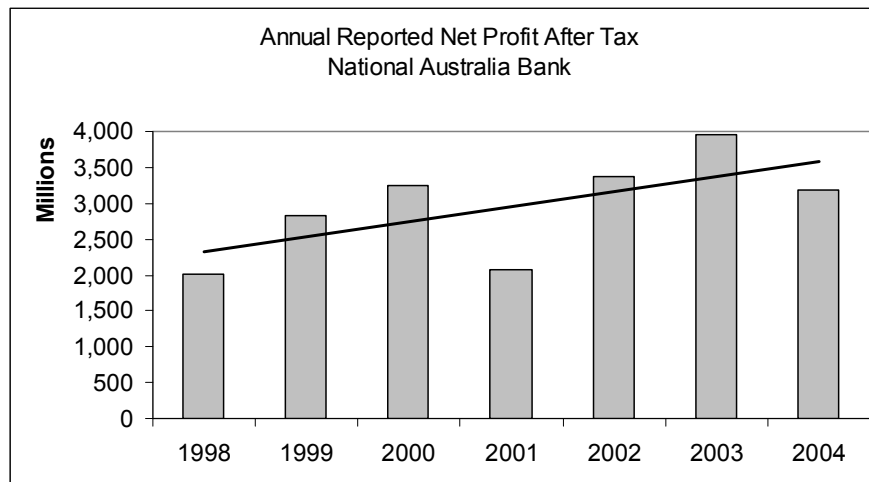
In contrast to the otherwise upward trend of NPAT are the very dramatic variations in TACC. These variations are a function of a significant increase in the cash flow from operations of \$7.2 billion in 2002 and then a rapid decline in 2003 to \$(0.5) billion, the only negative cash flow year reported in the research period for the NAB.

Table 28 National Australia Bank Reported Results (\$mil)

NAB	1998	1999	2000	2001	2002	2003	2004
NPAT	2,014	2,821	3,239	2,083	3,373	3,955	3,177
OpCash	519	3,542	2,278	2,675	7,242	(481)	4,862
TACC	1,495	(721)	961	(592)	(3,869)	4,436	(1,685)

A line of best fit overlaid on a graph of the NAB's NPAT for 1998–2004 shows significant linearity (shown in Figure 12). This evidence of positive linearity is arguably consistent with the risk of creative accounting within the financial statements (Holland and Ramsay 2003 p60). The upward slope of the line is consistent with benchmark beating behaviour, where a firm beats the previous reported profit (Hsu and Koh 2005). The line of best fit has a p-value of 0.1091 (t statistic is -1.8799) which supports a finding of strong evidence of possible benchmark beating behaviour.

Figure 12 National Australia Bank Reported NPAT



Step 4: The financial reports for the National Australia Bank during the period 1998 to 2004 reveal a number of significant events. In each year the significant event seemed to be contained and provided for in that year in the financial statements; however, as demonstrated with the commentary in Table 29, some of the events were multi-period, having a cumulative effect on the NPAT of the NAB.

Table 29 Content Analysis of NAB Financial Statements

Year	Summaries and Extracts from Annual Reports
1998	<p>February 1998, NAB acquired HomeSide, Inc. HomeSide, Inc was a Florida-based mortgage servicer and originator. At the time acquired it ranked the sixth largest mortgage servicer and the ninth largest mortgage originator in the United States with a mortgage book of \$132.4 billion. HomeSide's value was "in its superior systems and management". The 1998 Asian crises did not to affect NAB where exposure to Asia was 5.6% of total assets.</p> <p>Don Argus CEO, Mark Rayner Chairman</p>
1999	<p>Homeside grew its mortgaging servicing book to \$146 billion, servicing over 1.7 million households, and was poised to extend its mortgage expertise to Australia. Don Argus retired in May 1999, after 44 years with the NAB.</p> <p>Frank Cicutto CEO, Mark Rayner Chairman</p>
2000	<p>Profit increased for the third year in a row, despite an abnormal expense of \$204 million relating to a restructure of the company. In June 2000, the NAB acquired MLC fund management operations which managed \$61 billion funds under management.</p> <p>Frank Cicutto CEO, Mark Rayner Chairman</p>
2001	<p>NAB decided to pursue the sale of HomeSide Inc and incurred significant expenses of \$1.64 billion, relating to losses on the Homeside loan book.</p> <p>Frank Cicutto CEO, Charles Allen Chairman</p>
2002	<p>Further significant expenses were realised in 2002 of nearly \$0.6 billion, relating to the recapitalisation of HomeSide US and a large (\$412 million) restructuring provision. HomeSide was also sold in 2002 with a "\$6 million profit on sale".</p> <p>Frank Cicutto CEO, Charles Allen Chairman</p>
2004	<p>Discovery of a \$360 million foreign currency loss in January 2004, causing a change of leadership at the NAB. Other significant expenses of 2004 were not considered normal operation expenses including the scrapping of HomeSide lending software (\$409 million) and a provision for abnormal doubtful debts (\$292 million) adding to approximately \$1.0 billion.</p> <p>John Stewart CEO, Graeme Kraehe Chairman</p>

Source: annual reports for the National Australia Bank 1998 - 2004

Two issues from the content analysis provide possible evidence arguably consistent with the risk of creative accounting within the financial statements of the NAB for the sample period. First, during this period there were two changes of CEO and Chairman. In June 2000 there appeared to be a planned succession from Don Argus to Frank Cicutto as CEO of the NAB. Consistent with the Wells (2002) study the new CEO brought to bear “restructuring” expenses as abnormal expenses in the accounts. The first full year of Cicutto (2001) saw the provision of \$1.64 billion in loan write downs in relation to HomeSide Inc. This appears consistent with the Wells (2002) findings that an incoming CEO is inclined to manipulate earnings downwards in the first year for two reasons: a) to separate his performance from prior management and b) because the consequence of releasing bad news is negligent for the incoming CEO only in the first year. Another, perhaps more dramatic, change in CEO occurred in 2004 when John Stewart replaced Frank Cicutto after a significant foreign currency loss. Some have likened the breakdown in NAB’s corporate governance during this period, resulting in the foreign currency “fraud”, to Enron (Martinov-Bennie 2007 p89). Again, the new CEO brought to bear approximately \$1.0 billion in write downs and restructuring costs in 2004.

Second, the HomeSide Inc acquisition in 1998 and sale in 2002 appeared to have a \$2.0 billion effect on the NPAT of the NAB (\$1.64 billion in loan write downs [2001] and \$0.41 billion scrapping the HomeSide lending software [2004]). The literature identifies asset valuation (Clarke et al. 2002) and consolidation treatments (Tweedie and Whittington 1990) as possible creative accounting techniques. Asset valuation – in the NAB’s case, the valuation of the HomeSide loan book – may provide possible evidence arguably consistent with the risk of creative accounting within the financial statements of the NAB. The consolidation treatment of HomeSide resulting in the “profit on sale” of the HomeSide subsidiary of \$6 million in 2002 may also be corroborative evidence consistent with creative accounting behaviour. This is particularly the case when the \$6

million “profit on sale” of HomeSide is compared with the more than \$2.0 billion cumulative loss relating to the subsidiary from 1998 to 2002.

Sector 3 Summary: The first step of the four-step process adopted in this dissertation designed to identify likely users of creative accounting produced a relative river which had the widest 95% confidence interval of all three super sectors. This may indicate the financials sector had comparatively more discretionary accrual scope and thereby opportunity for creative accounting than the other super sectors.

NAB was selected as the case study because two residual outliers identified were outside the sector river (95% confidence intervals). The NPAT years 2002 and 2003 were 128 and 68 points above the upper confidence level for the respective years. A positive slope of the NPAT best fit line with a corresponding p-value of 0.1091 (t statistic is -1.8799) supports a finding of strong evidence of possible positive linearity in Holland and Ramsay (2003 p60) test. The progressively upward slope of the line is consistent with possible benchmark beating behaviour described by Hsu and Koh (2005).

The content analysis of the financial reports of the NAB over the 1998–2004 period found significant corroborative evidence consistent with potential of creative accounting. First, the changes in chief executive (CEO) in 2001 and 2004 were identified as a potential creative accounting event in the literature (Wells 2002). Second, the accounting treatment of the NAB subsidiary HomeSide (which appeared to add a \$2.0 billion loss to the NPAT of the NAB over the period) may be corroborative evidence consistent with creative accounting behaviour, specifically, the accounting treatment of the valuation of the HomeSide loan book and the consolidation treatment resulting in a \$6 million “profit on sale” of the HomeSide. The literature

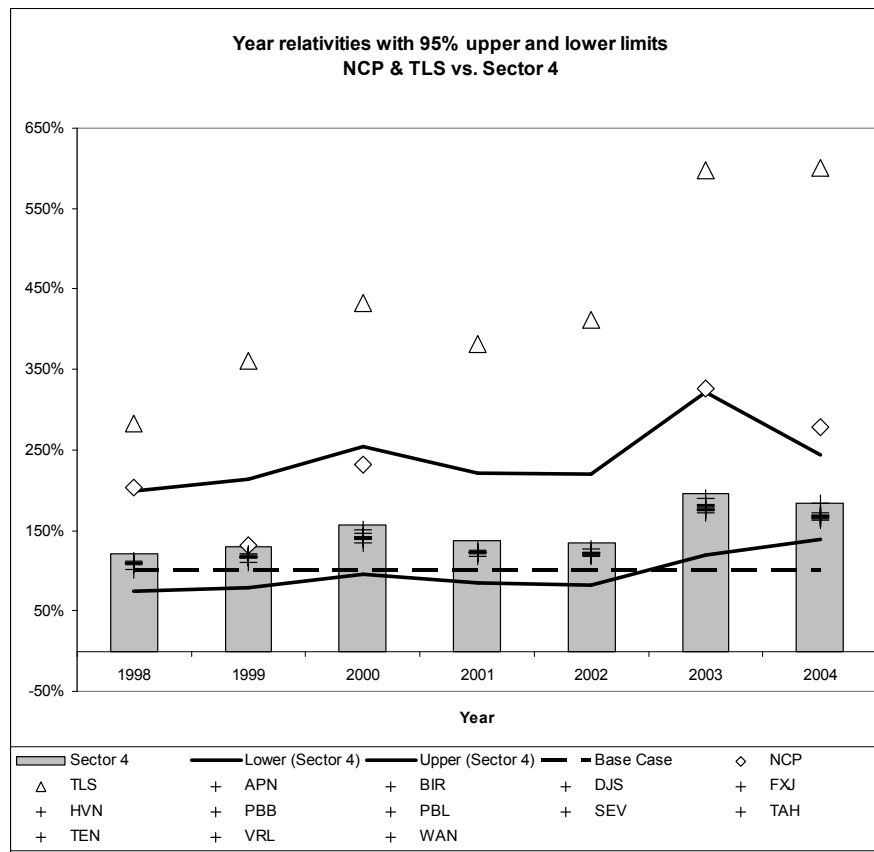
identifies accounting techniques of asset valuation (Clarke et al. 2002) and consolidation treatments (Tweedie and Whittington 1990) as possible creative accounting techniques.

4.4.3 Sector 4 (Discretionary)

Step 1: This group was made up of retail firms (David Jones, Harvey Norman, and Pacifica), broadcasters/publishers (PBL, Seven, Ten, Fairfax, APN News, West Australian and Village Roadshow) and gambling (Burswood and Tabcorp). Telstra was added to the Discretionary group as they also have businesses in broadcasting (Foxtel), retail (T-Shop) and communications, which adequately fits within a consumer discretionary definition (Mobile phones, internet services etc).

The relativity river for Sector 4 was only slightly less wide than for the Financials super sector. In a similar way to the Financials sector, wider bands at 95% confidence for this sector may be an indication that there was considerable discretionary accrual scope and opportunity for creative accounting (represented by a greater standard deviation from the mean error). The relativity river for this super sector, within which 95% of observations of TACC are contained, is shown in Figure 13.

Figure 13 Relativity River for Sector 4



Step 2 was to identify a company from the Discretionary Sector (Sector 4) with observations which were outside of the Relativity River for this sector. The company identified in the figure above as a case study was News Corporation (◆ NCP). For the 2004 year, News Corporation had an outlier outside the sector river of 35 points above the Upper Confidence level. Telstra (△ TLS) was not within the relativity river for any of the observation years and was excluded as a possible case study company on the basis that there may have been a misspecification error for the model in relation to Telstra.

The gamma distribution model excluded the NPAT observations for News Corporation for the firm years 2001 and 2002 (two of the 58 negative NPATs reported by the sample companies).

Interestingly, News Corporation reported its largest ever loss in 2002, a loss of \$(11.96) billion dollars. The \$(0.746) billion loss in 2001 was still significant, given the generally favourable economic conditions from 1998 to 2004 experienced by Australian companies.

Step 3 was to review the outlier company's reported NPAT for significant linearity. Table 30 shows the reported NPAT for News Corporation across the research period (with the exception of the negative results of 2001 and 2002). Less noticeable than for Woodside or the NAB above, News Corporation also had a constant upward trend in NPAT when 2001 and 2002 were excluded.

In contrast to the relatively stable operating cash flows (no negative cash flow year during the period) was the dramatic variations in NPAT. News Corporation cash flows did not go below a positive \$0.5 billion. The large loss year of 2002 may have been a form of "Big Bath" or large write off containing expenses of a recurring nature being rewritten off with extraordinary items, as identified by Clarke et al. (2003). TACC in 2004 fell above the 95% interval in relationship to its peers within Sector 4. News Corporation continued to have a cash flow surplus of approximately \$1.0 billion over reported NPAT for the following five years, 2003–2007.

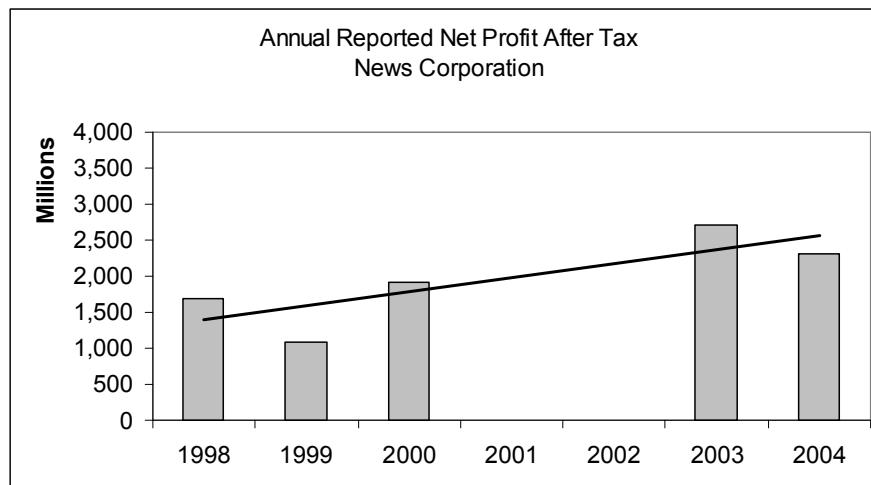
Table 30 News Corporation Reported Results (\$mil)

NCP	1998	1999	2000	2001	2002	2003	2004
NPAT	1,682	1,088	1,921	(746)	(11,962)	2,709	2,312
OpCash	1,430	1,290	533	920	3,078	3,720	3,432
TACC	252	(202)	1,388	(1,666)	(15,040)	(1,011)	(1,120)

When a best fit line is added to a graph of the News Corporation NPAT for 1998–2004 (excluding the losses of 2001 and 2002), linearity is observed (shown in Figure 14). The upward slope of the line is consistent with benchmark beating behaviour, where a firm beats the previous

reported profit (Hsu and Koh 2005). The line of best fit has a p-value of 0.0782 (t statistic is -2.3528) which is semi strong evidence; however, the test is significantly weakened by the loss of two observation years rendering the Holland and Ramsay (2003) test for positive linearity inconclusive.

Figure 14 News Corporation Reported NPAT



Step 4: The financial reports for the News Corporation during the period 1998 to 2004 revealed a major event as recorded in Table 31.

Table 31 Content Analysis of News Corporation Financial Statements

Year	Summaries and Extracts from Annual Reports
2002	NewsCorp recorded its largest ever loss of \$11.962 billion, reducing the retained earning of this large corporation to \$1 million. The write down of GemStar TV was the primary culprit along with losses the previous year in OneTel (\$0.576 billion), WebMD (\$0.426 billion), and a corporate restructure of costing \$0.258 billion.

Source: annual reports for the News Corporation 1998 - 2004

News Corporation had built and acquired companies which would take the company online. The future for distribution of product produced by NewsCorp, like television content, film library and production, and newsprint, was focused the internet. Sometimes referred to as convergence, the combining of these media and communication streams on the internet was ultimately overstated, leading to the DotCom collapse in 2001.

The 2002 loss recorded in the financial statements of News Corporation was the most significant event in the accounts of the company over the research period. The write off of the investments the company had made in subsidiary businesses of GemStar, OneTel and WebMD in that year reduced NewsCorp's retained earnings (total accumulated profits) to \$1.0 million.

The unit used within the financial statements to measure the financial performance and the financial position for the 2002 financial year was \$1.0 million. Therefore, the retained earnings of the company was reduced to a "1" in that year. In a similar vein to the benchmark-beating behaviour identified by Hsu and Koh (2005) and Holland and Ramsay (2003), it is significant that the retained earnings for that year did not reduce to less than "1", that is, the result of all of NewsCorp's write offs still produced a slightly positive result as opposed to a slightly negative result.

Sector 4 Summary: As for the Sector 4 super sector, the four-step process adopted in this dissertation identified the sector had relatively wide bands at 95% confidence when compared with the two other super sectors. This may indicate comparatively more discretionary accrual scope and opportunity for creative accounting within this sector.

News Corporation was selected as the case study as 2004 contained a residual outlier above the relativity river (95% confidence intervals) for this super sector. A positive slope of the NPAT best

fit line with a corresponding p-value of 0.0782 (t statistic is -2.3528) was semi-strong evidence the financial statements may have elements of creative accounting; however, the test was significantly weakened by the loss of two observation years rendering the Holland and Ramsay (2003) test for positive linearity inconclusive.

Corroborative evidence consistent with News Corporation financial statements containing a potential of creative accounting was found in the annual reports, particularly in 2002. In that year benchmark beating behaviour was identified similar to the constructs used by Hsu and Koh (2005) and Holland and Ramsay (2003). The 2002 retained earnings number reported in the financial statements was significant because it did not reduce to less than “1”, where, despite the significant write offs, the probability of a slightly negative result may have been high. The literature identifies years where companies write off large items which may also contain expenses of a recurring nature being rewritten off with the extraordinary item (Clarke et al. 2003). Therefore there may have been a risk of creative accounting behaviour in the financial statements of News Corporation for 2002 in the form of a “Big Bath”.

4.5 Chapter Summary

A summary of the findings of this chapter and the related outcomes is provided in Table 32.

Table 32 Chapter 4 Summary of Research Findings

Objective	Outcomes (by section number)
Outline the approach taken to test for creative accounting	Section 4.1 outlines the three approaches utilised to test for creative accounting:

	<ol style="list-style-type: none"> 1. histogram analysis 2. Jones (1991) regression analysis 3. GAP indexation model (a gamma model built in the data and methods chapter.
Detail the findings from the Histogram Analysis	Section 4.2 outlines the findings from the histogram analysis. A discontinuity at zero was discovered for the 497 firm years, where a discontinuity at both zero and the median profit for the two sectors of financials and consumer discretionary provided evidence of benchmark beating behaviour (a form of creative accounting).
Set out the findings from the Regression analysis	Section 4.3 details the findings from the Jones (1991) regression analysis. The test indicated that the independent variables had a significant effect on the dependent GAP (NPAT – CFO). However the model was not conclusive.
Step through the application of the GAP Indexation Model	<p>Section 4.4 applies a four step process to the 497 firm year sample:</p> <ol style="list-style-type: none"> 1. A relativity river was developed by sector to locate the unexpected accruals or “ε” for each

	<p>company.</p> <p>2. Unexpected accruals or “ε” which were outside of the 95% confidence upper and lower limits were identified, and one company from each sector was selected</p> <p>3. The linearity of the NPAT over the seven year period was examined for the selected company. Where the goodness of fit line was robust and the linearity was slightly positive the firm was suspected of creative accounting.</p> <p>4. The company’s financial reports for each of the years were examined by way of content analysis to determine a reason for suspicion of creative accounting (delivering circumstantial evidence only).</p>
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The next chapter draws conclusions from the findings regarding the 71 ASX200 sample companies examined in chapter 4.

CONCLUSIONS

5.1 Introduction

This chapter contains conclusions about the empirical evidence supporting the central thesis of this dissertation to provide evidence consistent with the potential presence of creative accounting in annual financial reports of the top 200 listed Australian in the seven years 1998–2004.

The evidence supports the hypothesis that listed Australian companies potentially engage in creative accounting (earnings management). The supporting evidence is based on the findings in chapter 4 where three creative accounting tests were applied on sample data: 497 firm years representing 71 Australian Listed companies who belonged to ASX200 (or surrogate) continuously between 1998 and 2004.

The persistence of creative accounting in Australia after the introduction of the International Financial Reporting Standards (IFRS) for financial years ending on or after 1 January 2005 was not considered within this dissertation. A previous study has provided evidence that earnings management is present among Australian companies in the reporting year before IFRS and in the reporting year after IFRS for Australian companies (Jeanjean and Stolowy 2008).

The three methods employed within this dissertation to determine the existence and level of creative accounting within reported results of Australian public companies were histogram analysis, Jones regression modelling and a gamma regression model referred to as the GAP indexation model or relativity river.

Australian studies have provided evidence supporting possible creative accounting within Australian listed companies without regard to any specific industry group, nor is there any detailed analysis of creative accounting at an individual firm level. As an extension, therefore, of previous Australian studies, this dissertation provides possible evidence about creative accounting within more detailed industry groupings:

- Sectors 1, 2 & 5 - Consumer Staples, Information Technology, Materials, Industrials, Property Trust, Utility, Health Care and Energy
- Sector 3 – Financials
- Sector 4 – Consumer Discretionary and Telecommunications.

Specific firms identified from the analysis suspected of utilising creative accounting techniques were investigated further. Evidence consistent with the potential presence of creative accounting was provided from case studies of Woodside Petroleum, the National Australia Bank and News Corporation. A chorus of corroborating evidence supporting the possible risk of creative accounting within the financial statements regarding these firms is set out in the findings; further studies are required to confirm this evidence and possibly identify the specific creative accounting practices adopted by these companies.

5.2 Evaluating the Findings

Evidence obtained from the histogram analysis confirms that companies mostly report positive net profit after tax (76% of the sample), and that there are greater number of firms achieving small positive NPAT from one year to the next (143 firm years in the first interval after zero) than small negative NPAT (34 firm years in the first interval before zero). The negative skewness of -9.363

for the distribution with a discontinuity at zero is in line with similar studies confirming the firms within the sample engaged in creative accounting activity (Burgstahler and Dichev 1997; Holland and Ramsey 2003; Coulton et al. 2005).

The approach taken by other Australian studies using histogram analysis is to identify the phenomenon of benchmark beating, where possible creative accounting (earnings management) is detected by observing a greater frequency of observations immediately to the right of the relevant earnings benchmark (Holland and Ramsey 2003; Coulton et al. 2005 p574). The findings in chapter 4 support the conclusions of these earlier studies, that there is evidence consistent with the potential presence of creative accounting where firms seem to manage earnings to ensure financial reports contain positive profits and to sustain the previous year's profit performance (Holland and Ramsey 2003 p60; Hsu and Koh 2005).

The histogram analysis of the three industry groupings revealed the pervasiveness of benchmark beating behaviour in each super sector¹². Notably the financials sector and the consumer discretionary sector seemed to have two significant benchmarks, zero and the median reported NPAT. The findings provide evidence of discontinuities in the distribution of NPAT for these two sectors at two separate and distinct intervals: zero and median NPAT. The evidence points to a stronger focus on benchmarks in these two sectors when compared to the others.

Application of the Jones regression model provided little supportive evidence of creative accounting within the sample. The models utilised the independent variables of change in revenue, property plant and equipment, time denoted by years and industry classification (defined in the three super sectors above). These independent variables had significant predictive ability (an F score of 26.62 with p factor of <0.0001) to determine the dependant variable TACC (total

¹²Three super sectors were defined in Chapter 3 as Financials, Consumer Discretionary and the Others

accruals). The Jones model was used to decompose total accruals into two parts: the non discretionary accruals and the unexpected accrual or discretionary portion).

The weakness of the Jones model was a low level ability to explain most of the significant relationships within the data. An R squared of 35.4% achieved in this dissertation compares favourably to other studies: Koh (2003) 12.8%, Davidson et al. (2005) 23.7%, Hsu and Koh (2005) 47.9% and Coulton et al. (2005) 57.1%.

However, an interpretation of an R squared of 35.4% is that the model does not explain the significant relationships that exist to predict the existence of creative accounting. The studies of Koh (2003), Davidson et al. (2005), Hsu and Koh (2005) and Coulton et al. (2005) added control variables other than the six control variables of this dissertation; however, these studies still recorded lower than 60% R squared. An R squared of greater than 60% may have suggested the model captures the relationships between the control variables in a more comprehensive manner. Recent studies have reviewed the use of Jones-based models and raise serious concerns that misspecification errors are persistent within standard linear regression models vis a vis the use of external financing and the gain and loss recognition asymmetries of firms (Ball and Shivakumar 2005; Shan et al. 2009).

The output of the Jones regression model identified the top 10 firms where the error (ϵ) highlighted the unexpected, non predicted accruals component. The 10 firms identified are suspected of reporting NPAT containing creative accounting practices or managing the firms earnings to beat benchmarks. These findings are supported by the findings of other Australian studies (Koh 2003; Hsu and Koh 2005). The output of the Jones model as applied in findings was inconclusive due to the low R-squared score obtained. Perhaps surprisingly or coincidentally, the Jones model analysis also identified the National Australia Bank and News Corporation

financial statements as possible creative accounting risks in various years (Table 23). Application of Jones-based models, particularly utilising the original accrual controls, did not identify Woodside Petroleum financial statements as a possible creative accounting risk. This is probably due to the narrow band width of the sector and the low power of the test (low R-squared).

The Jones regression model had been used in the literature to explore the nature of the relationships between various control factors including the effect of institutional ownership (Koh 2003; Hsu and Koh 2005), the role of corporate governance (Davidson et al. 2005), and audit quality (Herbohn and Ragunathan 2008).

Exploration of control factors was not a focus of this dissertation; rather, it aimed to identify a model or methods which are more likely to reliably identify firms engaging in creative accounting activity. This is not to say the relationship of institutional ownership, corporate governance and audit quality have no impact on these findings, as previous research suggests (Koh 2003; Davidson et al. 2007). The sample of 71 ASX200 companies have a large level of institutional ownership, engage predominantly top four audit firms and have levels of internal governance which on the whole are likely to be more rigorous than smaller public companies (Koh 2003; Hsu and Koh 2005; Davidson et al. 2005; Herbohn and Ragunathan 2008).

Finally, the explorative gamma model presented in the findings assisted to identify three firms, one from each of the three broad industry groupings utilised in this dissertation. Woodside Petroleum, the National Australia Bank and News Corporation were identified for firm-based case studies using a four-step process as firms likely to have engaged in creative accounting. Each of the companies had more than one year (from the seven years observed) where the unexpected accruals in respect of the reported net profit after tax were outside of the 95% confidence level predicted by the model. The three companies showed evidence of benchmark beating behaviour

through the slight positive linearity of the NPAT across the period of seven years. A slightly positive linearity of profit is evidence consistent with benchmark beating behaviour (Holland and Ramsey 2003; Coulton et al. 2005).

A content analysis of the financial reports of each of the three companies was examined to assist in the explanation of each of the years in which unexpected accruals were identified. Woodside Petroleum changed its accounting treatment for writing off exploration, evaluation and development in 2002, which had a significant impact on the NPAT. A change of accounting method has been identified as one of the techniques used by managers of firms to manage earnings (Black et al. 1998; Shilit 2002; Amat et al. 2003; Dellaportas 2005).

The National Australia Bank had significant events and restructures during this time, including the purchase, significant writedowns and sale of HomeSide Inc (a US based subsidiary), two changes in the companies chief executive officer and a significant foreign exchange loss from trading. The various treatments of subsidiary purchases and sales have been a source of creative accounting identified in the literature (Briloff 1972; Tweedie and Whittington 1990; Smith 1996). Wells (2002) provided evidence that a change in CEO by an Australian firm was a source of creative accounting behaviour.

The final company identified for case study analysis was News Corporation. Content analysis conducted on the financial reports of News Corporation revealed the 2002 loss of \$11.96 billion was the largest loss in NewsCorp's history, indeed the largest loss for an Australian company up until that time. There is evidence that an earnings "bath" is consistent with creative accounting behaviour (Dechow et al. 1995; Wells 2002; Clarke et al. 2003). Confirmation of evidence which is consistent with the potential presence of creative accounting at this time may be the positive cash flows from operations remaining for each year examined for NewsCorp.

5.3 Contributions to the Australian Literature

This dissertation provides three contributions to the literature of creative accounting (earnings management) in Australia. First, evidence is provided suggesting creative accounting phenomena are persistent within the reported NPAT of large corporations within Australia supporting previous studies in the Australian context (Wells 2002; Holland 2003; Koh 2003; Davidson et al. 2007; Herbohn and Rangunathan 2008). Against a backdrop of continually prosperous years (1998–2004) in Australia, some of the larger firms within the sample exhibited phenomenon which may be argued to be consistent with creative accounting.

Financial firms are also identified as possible users of creative accounting, particularly visible through benchmark-beating behaviour across the seven years where the discontinuity of NPAT was more evident at the median than at zero. The onset of the world economic crisis in 2007 placed the financial sector under intense scrutiny, for the most part outside of Australia; these findings suggest the strength of the financial sector in Australia may require scrutiny of its own.

Second, the use and application of the Jones (1991)-based model to identify creative accounting transgressors is limited. The version of the Jones model used in this dissertation was a straightforward linear model and was not sophisticated, like those used by Koh (2003) or Davidson et al. (2007), for example. Limiting the number of control variables used in the model to six was motivated by a desire to not just detect creative accounting, but to obtain a simple model which may be replicated by practitioners (possibly assisting them to complete professional engagements, like forming an audit opinion). This dissertation concurs with the findings of Coulton et al. (2005) when they rejected the hypothesis that the Jones models of unexpected accruals provides sufficient evidence of creative accounting.

The Jones workhorse (so described by Ball and Shivakumar (2005)) has been useful, in that it provides a proxy for managed earnings through decomposing total accruals into non discretionary and unexpected accruals. The search for unexpected accruals has leveraged from the work of Jones (1991) producing valuable incremental pieces, with Dechow et al. (1995), Subramanyam (1998) and Hribar and Collins (2002) as examples. Almost all of the Australian studies searching for unexpected accruals, or creative accounting, are grounded in the Jones methodology. Critical evaluation of Jones (1991) has focused on the inherent limitations of the model's linearity. Non-linear models, it is claimed, are able to explain substantially more variation in accruals (Ball and Shivakumar 2005 p209; Shan et al. 2009 p4).

Third, a new model is presented in the form of the explorative gamma model developed within this dissertation (designated the GAP indexation model). The gamma model builds on the Jones workhorse methodology by decomposing total accruals into the two parts. As suggested above, an underlying motivation was the desire to develop a test to detect creative accounting which may be replicated by practitioners. After applying a gamma distribution to the dataset the GAP indexation model achieved a quite significant 2% threshold (p-value of 0.0150), despite limiting the number of control variables to the same six variables used in the Jones regression analysis.

The gamma model approach is limited to dealing only with positive profits. One of the motivations of firms adopting creative accounting techniques is to avoid small losses and in their place report small profits (Holland and Ramsey 2003; Coulton et al. 2005). On this basis, eliminating loss years from the data may not have much of an effect on the predictive ability of the model to detect creative accounting. However, losses identified as an earnings bath are often the result of creative accounting (Wells 2002). The original dataset of 497 firm years contained only 71 firm years (14%) which were losses. The comparatively low level of losses may have been

due to the prosperity of the period under review or the bias toward large firms which are more likely to have a mature, stable business. The selection of a different period, where a significant portion of the total firm years were loss years, may diminish the power of the gamma model.

Given that the data used in the model are readily available through services like the Aspect database in Australia, further developments of the model may be useful for ASIC or APRA to screen financial statements of companies within sectors to determine firms most at risk of creative accounting persistence. Further research and model specification may be required to achieve an appropriate screening device or screening model.

5.4 Chapter Summary

A summary of the research objectives of this chapter and the related outcomes is provided in Table 33.

Table 33 Chapter 5 Summary of Conclusions from Research

Restates the objectives of the research	Section 5.1 sets out the purpose of the research models and findings in order to reach conclusions about the dissertations objective.
Summarises the evidence and makes conclusions for each of the research methods	<p>Section 5.2 draws conclusion for the four research propositions:</p> <ol style="list-style-type: none"> 1. Evidence obtained from the histogram analysis confirms that companies mostly report positive Net Profit after Tax using

	<p>creative accounting techniques</p> <p>2. Supportive evidence of creative accounting within the sample was obtained through the application of the Jones regression model</p> <p>Summarised evidence obtained about financial reports of Woodside Petroleum, the National Australia Bank and News Corporation through a four step process</p>
Provides three contributions this dissertation makes to the literature and practice	<p>Section 5.3 suggests three contributions of this dissertation:</p> <ol style="list-style-type: none"> 1. Evidence is provided that the creative accounting phenomenon is persistent within large Australia firms including financial firms 2. The limited application of the Jones (1991) model to identify creative accounting is set out, despite the prolific use of this technique in the Australian literature. 3. GAP indexation model developed from explorative modelling of the data which has a quite high 2% significance threshold

The next chapter sets out the limitations about the conclusions drawn from the study of 71 ASX200 sample companies. Future directions for further research are considered in the area of identifying creative accounting practices among Listed Australian companies.

LIMITATIONS AND DIRECTIONS FOR FUTURE STUDY

6.1 Introduction

This dissertation investigating the likelihood Creative Accounting techniques are used by Australian listed company reports has led to building a model to assist in the identification of companies more likely to have engaged in creative accounting techniques in their annual reports.

The place of this dissertation within the research is a building block on the creative accounting literature in Australia. The literature survey in chapter 2 revealed limited empirical evidence aimed at identifying creative accounting in an Australian setting. An objective of this research was to further the understanding of the role of creative accounting in Australia.

This chapter identifies the limitations of this research and the limitation of the Gap indexation model as applied to the sample companies' reported results. The discussion then moves to suggested future directions for further research and the application of this study to policy development and standard setting.

6.2 Limitations

The focus of this study has been to review the likelihood of ASX200 companies using creative accounting techniques in the aggregate to manufacture more beneficial reported results.

6.2.1 Data Error

The sampling process adopted by this research was targeted at optimising coverage of the Australian Stock Exchange companies in terms of market capitalisation. Whilst the sample of 71

companies had a combined coverage of greater than 61% of the total ASX capitalisation in any year, this sample was biased toward large companies. The sampling bias may reduce the application or relevance of the study to the thousands of smaller companies on the ASX (Holland and Ramsey 2003 p50). Conversely, the sample contains 71 firms which collectively have a disproportionately significant level of influence and potential wealth devolution effects on the Australian capital market.

The selection of variables from annual reported results also limited the sampling process from greater available market information. Listed Australian companies make financial information available to the market in a number of forms: quarterly announcements, research company reports and announcements. An argument may be made that these other sources of firm information keep the market fully informed of any changes companies make to the methods and techniques used in producing their annual reported results (Ball 2008). This dissertation draws on data from financial statements only and not other market sources to gather, for example, NPAT and cash flow from operations.

The study applied a gamma distribution model to identify financial reports that, relative to the sample, were outliers. The gamma model utilised only those results where the NPAT was greater than Cash from operations. By excluding the negative observations, the study did not consider nor form a view of the 71 observations (from the 497 sample observations) which were negative. The inclusion of the negative observations in the model, whilst complicating the model, may have shed light on the use by companies of reporting a NPAT which is less than their Cash from operations.

6.2.2 Statistical Error

In a statistical context, Type I and Type II errors are unavoidable as part of a statistical decision process (Mendenhall et al. 2003).

Type I error refers to the chance of rejecting a “correct” null hypothesis. This study may have accused companies and/or sectors of Creative Accounting through the adoption of the dissertation’s use of the Jones (1991) model (Ball and Shivankumar 2005 p209). Misspecification errors of the Jones-based models, particularly in relation to external financing, are known (Dechow et al. 2007 p538)

Type II error refers to the chance of not rejecting a “false” null hypothesis. The model used in this study may not have identified the companies within the sample who had adopted creative accounting techniques.

The complementary nature of the two types of error implies that for the purposes of this study, by minimising Type I error, more weight was given to Type II error.

6.2.3 Model Error

The model developed in this research has assumed that an aggregate variable like Net Profit Before Tax can be used to identify the likelihood of Creative Accounting in reported results. Creative accounting is a varying or modifying use of legitimate accounting techniques which gives beneficial outcomes. By definition, creative accounting is not identified in an aggregate variable, only in the misuse of a specific technique (Coulton et al. 2005 p557). This study was more like a survey, searching for unexpected accruals which may indicate the likelihood of creative accounting. Problems associated with the use of discretionary accruals as a proxy for earnings management are well documented (Davidson et al. 2005 p264; Shan et al. 2009 p3).

The study was also limited to the quantitative nature of the analysis and model development. This research was unable to make qualitative assessments of the motivations, strategies and company values adopted by managers utilising creative accounting techniques. Indeed, this study did not identify the specific techniques used by any manager.

Another limitation of this study lies within the modelling process, commonly known as the model specification error, which is a result of achieving a balance between two extremes: an over-simplified model with too few variables. Such a model unrealistically attempts to capture every single element of the underlying relationship. This is described mathematically by Stapleton (1995), who has categorised the two extremes as model under specification and over specification.

For example, the study has shone a light on companies which report larger than normal NPAT, when compared with the relative differences between NPAT and Cash from operations. The assertion was that larger than normal NPAT/Cash from operations differences are due to the use of creative accounting techniques being adopted. This assertion may have had an embedded over-simplification error, where too few variables were included into the Gap indexation model.

An example of potential under specification in this study is where interactions and/or multi-order effects (Weisberg, 2005) have not been examined. From a practical point of view, the possible existence of interactions and/or multi-order effects would only compound the results of the main effects of the factors which had already been explored in the models.

6.3 Future Directions

This study identified that there is a likelihood creative accounting exists in financial reports of public companies within Australia. This study did not demonstrate specific creative accounting

techniques used by companies in Australia. Future studies could provide the evidence of creative accounting in the Australian context, by identifying the specific techniques and methods used.

The research period, 1998 to 2004, was designed to specifically exclude the impact of the changes to accounting standards caused by the adoption of the International Framework Reporting Standards. Future research may focus on the ability of the new standards to curb the use of creative accounting in Australia, or if the adoption of the new standards would lead to greater opportunities for manipulation of reported results in favour of the companies and their managers (Jeanjean and Stolowy 2008).

Another area for further research may be a more qualitative approach to addressing manager motive or engagement with creative accounting. Interviewing managers, questioning users, drawing on other qualitative theories of management behaviour will provide depth to this field.

A combination of qualitative analysis and quantitative modelling and content analysis may provide valuable insights into the use of creative accounting. More and varied approaches to analysing creative accounting may help triangulate the problem and better assist in providing real solutions.

6.4 Policy Implications and Standard Setting

At a regulatory and financial reporting framework level, this study has done little other than to highlight the likelihood of creative accounting in some reported financial accounts. The big challenge facing the standard setters and policy makers is to provide enough flexibility in the Accounting Standards to account for the varying individual circumstances of unique businesses and companies. The counter need is to provide enough rigidity to ensure companies do not choose methods and techniques within standards which provide a benefit to the company and the manager, but may have a negative impact on the user.

Legitimacy as proposed by Suchman (1995) is not limited to firms, but is equally applicable to those who set the financial disclosures, the standard setters. The notion that firms exist within social constructs containing values, a system of norms, beliefs and obligations is the basis for legitimacy theory. Suchman (1995) argued that firms are unlikely to ignore social concerns and expectations, but rather they will act and adopt practices that will conform to the general wishes of the community. If they behave in a manner outside of socially accepted constructs they will risk creating a legitimacy gap (Sethi 1979). Standard setters are often in the process of gaining, maintaining and repairing their legitimacy.

The need for legitimacy by organisations or, in the negative sense, an organisation's fear of creating a legitimacy gap, is a strong motivation for organisations to produce disclosures of financial information that is generally expected by the community (whether an individual firm level or at the standard setter level). Generally Accepted Accounting Principles developed by standard setters must strive to eliminate creative accounting. A failure to do so will create a legitimacy gap, as the community's expectation (especially within Australia) is that creative accounting with financial reports is not acceptable (The Australian, 13 April 2009).

The financial crisis which started in late 2007 has put a number of issues back in the spotlight for standard setters, including a requirement for financial assets to be "marked to market". One suggestion is to produce two sets of financial reports, one where the assets are "marked to market" and one where the assets are valued at historical cost (Pozen 2009). These are difficult times for standard setters as their role is to add value through enabling financial statements to effectively portray the economic position (not positions) of the firm in a timely and credible way (Healy and Wahlen 1999).

An implication the likelihood of creative accounting is present in Australian public company financial reports presents a significant obstacle to the users of financial reports. This is particularly the case where the users are unsophisticated and not proficient in understanding fundamental elements of the accounting process. The profession has a role to play, whether through the special franchise granted by the public when exercising the audit function (Briloff 2002), or in assisting the regulatory standard setters to improve and develop accounting standards which lead to the elimination creative accounting from financial reports.

6.5 Chapter Summary

A summary of the research objectives of this chapter and the related outcomes is provided in Table 34.

Table 34 Chapter 6 Summary of Limitations and Future Directions for Study

Limitations of the research are presented	<p>Section 6.2 identifies limitations of this study around three main sources:</p> <ol style="list-style-type: none"> 1. sample Error – acknowledging the collection of sample data is biased to larger ASX companies 2. statistical Error – the model may identify companies with an improbable reported results incorrectly, yet other improbable reported results are not identified by the
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	<p>model at all</p> <p>3. model errors – recognise that the modelling process may be over simplified, especially in relation to the use of aggregate variables.</p>
Identifies future directions for further research	Section 6.3 provides a number of directions for further research for both quantitative and qualitative work.
Briefly sets out some policy implications from this study	Section 6.4 suggests that policy makers and standard setters need to be cognisant of the likelihood companies may use the accounting standards and the future accounting standard for their benefit and the benefit of the manager, which may not be to the benefit of the user of the financial information.

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APPENDIX A

Sample Companies

	Code	Sector (S&P 200)	Company
1	APN	Consumer Discretionary	APN NEWS & MEDIA
2	BIR	Consumer Discretionary	BURSWOOD LIMITED
3	DJS	Consumer Discretionary	DAVID JONES LIMITED
4	FXJ	Consumer Discretionary	FAIRFAX (JOHN)
5	HVN	Consumer Discretionary	HARVEY NORMAN
6	NCP	Consumer Discretionary	NEWS CORPORATION
7	PBB	Consumer Discretionary	PACIFICA GROUP
8	PBL	Consumer Discretionary	PUBLISHING & BROAD
9	SEV	Consumer Discretionary	SEVEN NETWORK
10	TAH	Consumer Discretionary	TABCORP HOLDINGS LTD
11	TEN	Consumer Discretionary	TEN NETWORK HOLDINGS
12	VRL	Consumer Discretionary	VILLAGE ROADSHOW LTD
13	WAN	Consumer Discretionary	WEST AUSTRALIAN NEWS
14	CCL	Consumer Staples	COCA-COLA AMATIL
15	CML	Consumer Staples	COLES MYER LTD
16	FCL	Consumer Staples	FUTURIS CORPORATION
17	FOA	Consumer Staples	FOODLAND ASSOCIATED
18	LNN	Consumer Staples	LION NATHAN LIMITED
19	NFD	Consumer Staples	NATIONAL FOODS LTD
20	WOW	Consumer Staples	WOOLWORTHS LIMITED
21	CTX	Energy	CALTEX AUSTRALIA
22	OSH	Energy	OIL SEARCH LTD
23	STO	Energy	SANTOS LTD
24	WPL	Energy	WOODSIDE PETROLEUM
25	ADB	Financials	ADELAIDE BANK
26	AMP	Financials	AMP LIMITED
27	ANZ	Financials	AUSTRALIA & NZ BANK
28	BEN	Financials	BENDIGO BANK LIMITED
29	CBA	Financials	COMMONWEALTH BANK.
30	LLC	Financials	LEND LEASE CORP.
31	MBL	Financials	MACQUARIE BANK LTD
32	NAB	Financials	NATIONAL AUST. BANK
33	PPT	Financials	PERP.TRUSTEES AUST.
34	QBE	Financials	QBE INSURANCE GROUP

	Code	Sector (S&P 200)	Company
35	SGB	Financials	ST GEORGE BANK
36	WBC	Financials	WESTPAC BANKING CORP
37	WSF	Financials	WESTFIELD HOLDINGS
38	COH	Health Care	COCHLEAR LIMITED
39	CSL	Health Care	CSL LIMITED
40	MAY	Health Care	MAYNE NICKLESS LTD
41	NRT	Health Care	NOVOGEN LIMITED
42	SHL	Health Care	SONIC HEALTHCARE
43	ADZ	Industrials	ADSTEAM MARINE
44	BIL	Industrials	BRAMBLES INDUSTRIES
45	CRG	Industrials	CRANE GROUP LIMITED
46	GWT	Industrials	GWA INTERNATIONAL
47	HLY	Industrials	HILLS MOTORWAY GROUP
48	LEI	Industrials	LEIGHTON HOLDINGS
49	QAN	Industrials	QANTAS AIRWAYS
50	SRP	Industrials	SOUTHCORP LIMITED
51	SPT	Industrials	SPOTLESS GROUP LTD
52	WES	Industrials	WESFARMERS LIMITED
53	ERG	Information Technology	ERG LIMITED
54	ABC	Materials	ADELAIDE BRIGHTON
55	AMC	Materials	AMCOR LIMITED
56	CAA	Materials	CAPRAL ALUMINIUM
57	CSR	Materials	CSR LIMITED
58	LHG	Materials	LIHIR GOLD LIMITED
59	NCM	Materials	NEWCREST MINING
60	ORI	Materials	ORICA LIMITED
61	RIO	Materials	RIO TINTO LIMITED
62	SMS	Materials	SIMSMETAL LIMITED
63	WYL	Materials	WATTYL LIMITED
64	CEP	Property Trusts	CENTRO PROPERTIES.
65	GAN	Property Trusts	GANDEL RETAIL TRUST
66	SGP	Property Trusts	STOCKLAND TRUST GRP
67	THG	Property Trusts	THAKRAL HOLDINGS GRP
68	TLS	Telecommunications	TELSTRA CORPORATION.
69	AGL	Utilities	AUSTRALIAN GAS LIGHT
70	ENE	Utilities	ENERGY DEVELOPMENTS
71	ENV	Utilities	ENVESTRA LIMITED

APPENDIX B

Histogram Analysis

The UNIVARIATE Procedure

Variable: scaledNPAT

Moments			
N	497	Sum Weights	497
Mean	41.228	Sum Observations	20490.114
Std Deviation	157.075	Variance	24672.706
Skewness	-9.363	Kurtosis	162.153
Uncorrected SS	13082420.400	Corrected SS	12237662.300
Coeff Variation	380.996	Std Error Mean	7.046

Basic Statistical Measures			
Location		Variability	
Mean	41.228	Std Deviation	157.075
Median	53.405	Variance	24673.000
Mode	45.045	Range	3663.000
		Interquartile Range	44.012

Tests for Location: Mu0=0				
Test	Statistic		p Value	
Student's t	t	5.851	Pr > |t|	<.0001
Sign	M	190.500	Pr >= |M|	<.0001
Signed Rank	S	47931.500	Pr >= |S|	<.0001

Quantiles (Definition 5)	
Quantile	Estimate
100% Max	1084.786
99%	333.992
95%	120.212
90%	100.960
75% Q3	72.171
50% Median	53.405
25% Q1	28.159
10%	-12.251
5%	-58.913
1%	-459.150
0% Min	-2578.002

The SAS System

The UNIVARIATE Procedure

Variable: scaledNPAT

sector_cat2 = 1

Moments			
N	308	Sum Weights	308
Mean	34.558	Sum Observations	10643.897
Std Deviation	185.137	Variance	34275.583
Skewness	-8.844	Kurtosis	133.264
Uncorrected SS	10890437.000	Corrected SS	10522604.100
Coeff Variation	535.726	Std Error Mean	10.549

Basic Statistical Measures			
Location		Variability	
Mean	34.558	Std Deviation	185.137
Median	50.333	Variance	34276.000
Mode	45.045	Range	3663.000
		Interquartile Range	51.583

Tests for Location: Mu0=0				
Test	Statistic		p Value	
Student's t	t	3.276	Pr > |t|	0.0012
Sign	M	110.000	Pr >= |M|	<.0001
Signed Rank	S	17136.000	Pr >= |S|	<.0001

Quantiles (Definition 5)	
Quantile	Estimate
100% Max	1084.786
99%	333.992
95%	117.519
90%	99.627
75% Q3	72.066
50% Median	50.333
25% Q1	20.483
10%	-19.618
5%	-98.911
1%	-423.015
0% Min	-2578.002

The SAS System

The UNIVARIATE Procedure

Variable: scaledNPAT

sector_cat2 = 2

Moments			
N	91	Sum Weights	91
Mean	42.628	Sum Observations	3879.158
Std Deviation	94.703	Variance	8968.665
Skewness	-7.727	Kurtosis	66.674
Uncorrected SS	972541.070	Corrected SS	807179.866
Coeff Variation	222.161	Std Error Mean	9.928

Basic Statistical Measures			
Location		Variability	
Mean	42.628	Std Deviation	94.703
Median	57.079	Variance	8969.000
Mode	.	Range	893.357
		Interquartile Range	32.643

Tests for Location: Mu0=0				
Test	Statistic		p Value	
Student's t	t	4.294	Pr > |t|	<.0001
Sign	M	39.500	Pr >= |M|	<.0001
Signed Rank	S	1860.000	Pr >= |S|	<.0001

Quantiles (Definition 5)	
Quantile	Estimate
100% Max	107.926
99%	107.926
95%	87.362
90%	81.831
75% Q3	71.170
50% Median	57.079
25% Q1	38.528
10%	20.879
5%	-25.270
1%	-785.431
0% Min	-785.431

The SAS System

The UNIVARIATE Procedure

Variable: scaledNPAT

sector_cat2 = 3

Moments			
N	98	Sum Weights	98
Mean	60.888	Sum Observations	5967.059
Std Deviation	93.947	Variance	8825.958
Skewness	-0.923	Kurtosis	16.745
Uncorrected SS	1219442.290	Corrected SS	856117.921
Coeff Variation	154.293	Std Error Mean	9.490

Basic Statistical Measures			
Location		Variability	
Mean	60.888	Std Deviation	93.947
Median	56.895	Variance	8826.000
Mode	.	Range	986.374
		Interquartile Range	42.715

Tests for Location: Mu0=0				
Test	Statistic		p Value	
Student's t	t	6.416	Pr > |t|	<.0001
Sign	M	41.000	Pr >= |M|	<.0001
Signed Rank	S	2025.500	Pr >= |S|	<.0001

Quantiles (Definition 5)	
Quantile	Estimate
100% Max	489.242
99%	489.242
95%	189.266
90%	136.026
75% Q3	80.249
50% Median	56.895
25% Q1	37.534
10%	13.157
5%	-56.806
1%	-497.132
0% Min	-497.132

APPENDIX C

Models Output

This section contains the output of model fitting, selection and validation.

List of Models Summary

Model	Response	Included Factors	Response distribution
1	NPAT	Sector + Operating Cash Flow	Normal
2	NPAT	Year + Operating Cash Flow	Normal
3	NPAT	Large Cap + Operating Cash Flow	Normal
4	NPAT	Sector + Large Cap + Operating Cash Flow	Normal
5	NPAT	Sector + Year + Operating Cash Flow	Normal
6	NPAT	Sector + Large Cap + Year + Operating Cash Flow	Normal
7	(NPAT>0)	Sector + Operating Cash Flow	Gamma
8	(NPAT>0)	Year + Operating Cash Flow	Gamma
9	(NPAT>0)	Large Cap + Operating Cash Flow	Gamma
10	(NPAT>0)	Sector + Large Cap + Operating Cash Flow	Gamma
11	(NPAT>0)	Sector + Year + Operating Cash Flow	Gamma
12	(NPAT>0)	Large Cap + Year + Operating Cash Flow	Gamma
13	(NPAT>0)	Sector + Large Cap + Year + Operating Cash Flow	Gamma
14	Sales1 - Cash	Revenue+ large_cap+ sector	Gamma
15	Sales1 - Cash	Revenue+ large_cap+ sector+ year	Gamma

Model 1: NPAT = Sector + Operating Cash flow

Model Information

Model 1: NPAT = Sector + Operating Cash flow

Data Set

ASPECT.OUTPUT_YEAR		
Distribution	Normal	
Link Function	Identity	
Dependent Variable	NPAT	NPAT
Scale Weight Variable	Market_Cap	Market Cap
Number of Observations Read	497	
Number of Observations Used	497	
Sum of Weights	3132421	

Class Level Information

Class	Levels	Values
Sector_Cat	5	1 2 3 4 5

Criteria For Assessing Goodness Of Fit

Criterion	DF	Value	Value/DF
Deviance	491	6.66106E+24	1.35663E+22
Scaled Deviance	491	491	1
Pearson Chi-Squared	491	6.66106E+24	1.35663E+22
Scaled Pearson X2	491	491	1
Log Likelihood		(11,456.08)	

Analysis Of Parameter Estimates

Parameter	DF	Estimate	Standard Error	Wald 95% Confidence Limits		Chi-Squared	Pr > ChiSq
Intercept	1	84,283,214	225,980,000	(358,600,000)	527,200,000	0.140	0.709
Operating_Cash_Flow	1	0.43	0.03	0.37	0.49	213.370	<.0001
Sector_Cat	1	(44,690,000)	341,180,000	(713,400,000)	624,010,000	0.020	0.896
Sector_Cat	2	44,946,684	275,050,000	(494,100,000)	584,030,000	0.030	0.870
Sector_Cat	3	893,940,000	253,010,000	398,050,000	1,389,800,000	12.480	0.000
Sector_Cat	4	126,390,000	286,390,000	(434,900,000)	687,700,000	0.190	0.659
Sector_Cat	5	-	-	-	-	.	.
Scale	0	116,500,000,000	-	116,500,000,000	116,500,000,000		

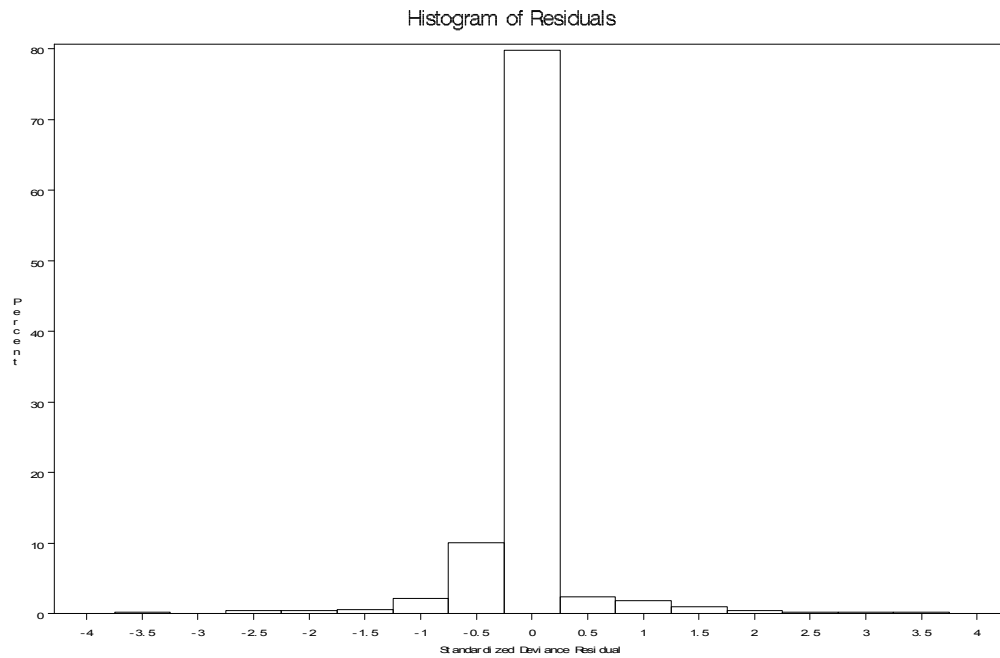
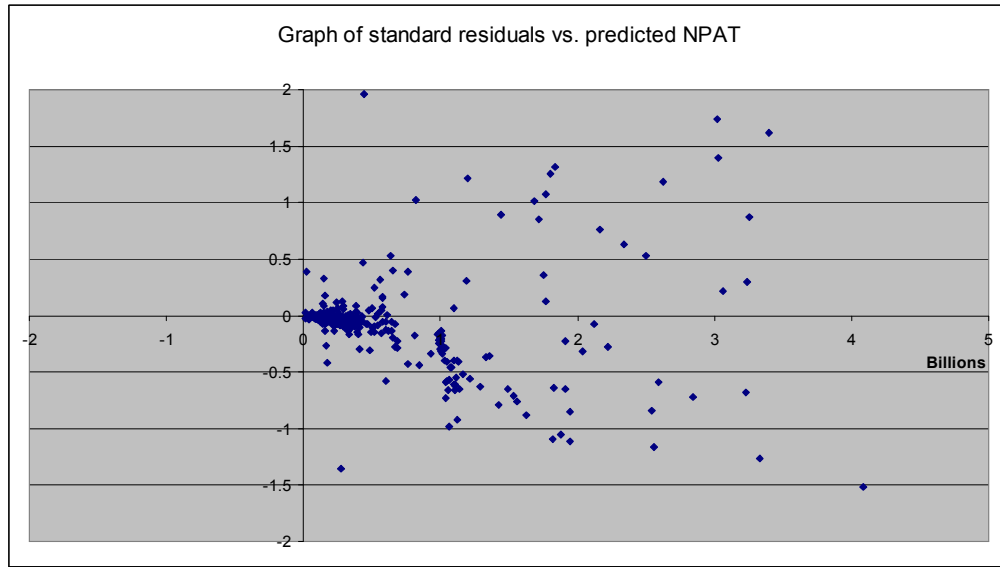
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Lagrange Multiplier Statistics

Parameter	Chi-Squared	Pr > ChiSq
Scale	0.0369	0.8477

LR Statistics For Type 3 Analysis

Source	Num DF	Den DF	F Value	Pr > F	Chi-Squared	Pr > ChiSq
Operating_Cash_Flow	1	491	213.37	<.0001	213.37	<.0001
Sector_Cat	4	491	9.38	<.0001	37.52	<.0001



Model 2: NPAT = Year + Operating Cash flow

Model Information

Model 2: NPAT = Year + Operating Cash flow

Data Set

ASPECT.OUTPUT_YEAR		
Distribution	Normal	
Link Function	Identity	
Dependent Variable	NPAT	NPAT
Scale Weight Variable	Market_Cap	Market Cap
Number of Observations Read	497	
Number of Observations Used	497	
Sum of Weights	3132421	

Class Level Information

Class	Levels	Values
Year	7	1998 1999 2000 2001 2002 2003 2004

Criteria For Assessing Goodness Of Fit

Criterion	DF	Value	Value/DF
Deviance	489	6.66236E+24	1.36245E+22
Scaled Deviance	489	489	1
Pearson Chi-Squared	489	6.66236E+24	1.36245E+22
Scaled Pearson X2	489	489	1
Log Likelihood		(11,456.14)	

Analysis Of Parameter Estimates

Parameter	DF	Estimate	Standard Error	Wald 95% Confidence Limits		Chi-Squared	Pr > ChiSq
Intercept	1	815,040,000	172,230,000	477,470,000	1,152,600,000	22	<.0001
Operating_Cash_Flow	1	0.42	0.03	0.37	0.47	278	<.0001
Year	1998	(412,400,000)	243,850,000	(890,300,000)	65,545,462	2.860	0.091
Year	1999	(390,100,000)	243,340,000	(867,000,000)	86,871,097	2.570	0.109
Year	2000	(36,100,000)	238,770,000	(504,100,000)	431,880,000	0.020	0.880
Year	2001	(345,200,000)	230,160,000	(796,300,000)	105,850,000	2.250	0.134
Year	2002	(1,217,000,000)	234,550,000	(1,677,000,000)	(757,500,000)	27	<.0001
Year	2003	22,936,032	242,110,000	(451,600,000)	497,450,000	0.010	0.925
Year	2004	-	-	-	-	.	.
Scale	0	116,700,000,000	-	116,700,000,000	116,700,000,000	.	.

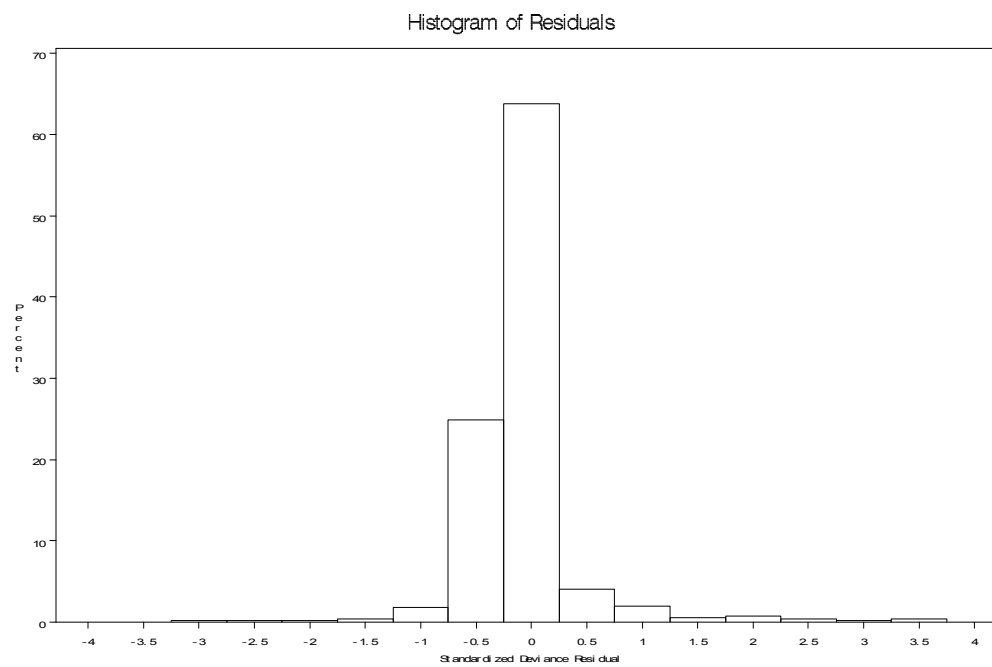
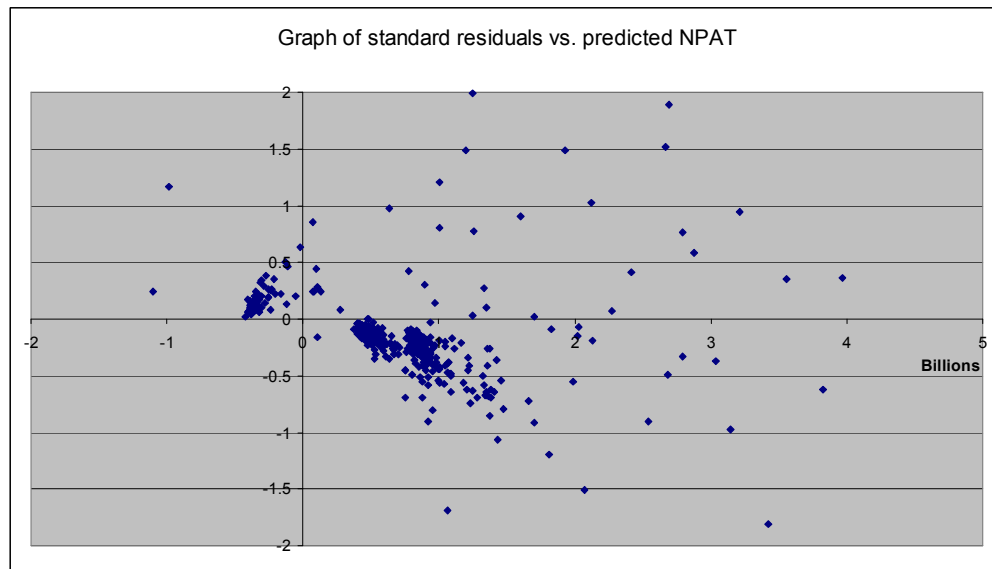
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Lagrange Multiplier Statistics

Parameter	Chi-Squared	Pr > ChiSq
Scale	0.066	0.7973

LR Statistics For Type 3 Analysis

Source	Num DF	Den DF	F Value	Pr > F	Chi-Squared	Pr > ChiSq
Operating_Cash_Flow	1	489	277.94	<.0001	277.94	<.0001
Year	6	489	6.21	<.0001	37.27	<.0001



Model 3: NPAT = Large Cap + Operating Cash flow

Model Information

Model 3: NPAT = Large Cap + Operating Cash flow

Data Set

ASPECT.OUTPUT_YEAR		
Distribution	Normal	
Link Function	Identity	
Dependent Variable	NPAT	NPAT
Scale Weight Variable	Market_Cap	Market Cap
Number of Observations Read	497	
Number of Observations Used	497	
Sum of Weights	3132421	

Class Level Information

Class	Levels	Values
Year	5	1 2 3 4 5

Criteria For Assessing Goodness Of Fit

Criterion	DF	Value	Value/DF
Deviance	491	6.66106E+24	1.35663E+22
Scaled Deviance	491	491	1
Pearson Chi-Squared	491	6.66106E+24	1.35663E+22
Scaled Pearson X2	491	491	1
Log Likelihood		(11,456.08)	

Analysis Of Parameter Estimates

Parameter	DF	Estimate	Standard Error	Wald 95% Confidence Limits		Chi-Squared	Pr > ChiSq
Intercept	1	84,283,214	225,980,000	(358,600,000)	527,200,000	0.140	0.709
Operating_Cash_Flow	1	0.43	0.03	0.37	0.49	213	<.0001
Sector_Cat	1 1	(44,690,000)	341,180,000	(713,400,000)	624,010,000	0.020	0.896
Sector_Cat	2 1	44,946,684	275,050,000	(494,100,000)	584,030,000	0.030	0.870
Sector_Cat	3 1	893,940,000	253,010,000	398,050,000	1,389,800,000	12	0.000
Sector_Cat	4 1	126,390,000	286,390,000	(434,900,000)	687,700,000	0.190	0.659
Sector_Cat	5 0	-	-	-	-	.	.
Scale	0	116,500,000,000	-	116,500,000,000	116,500,000,000		

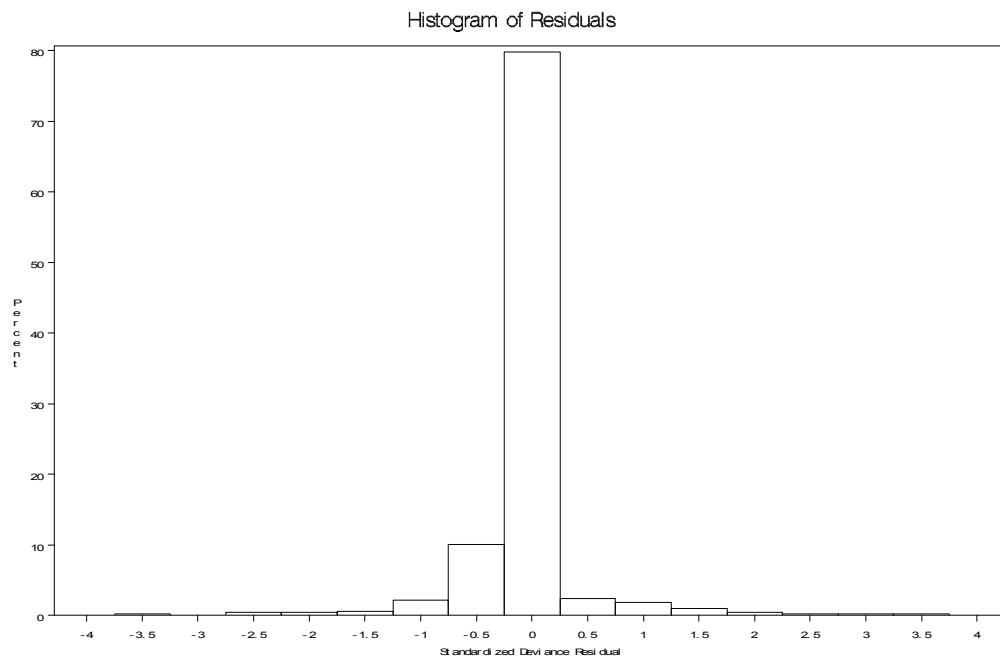
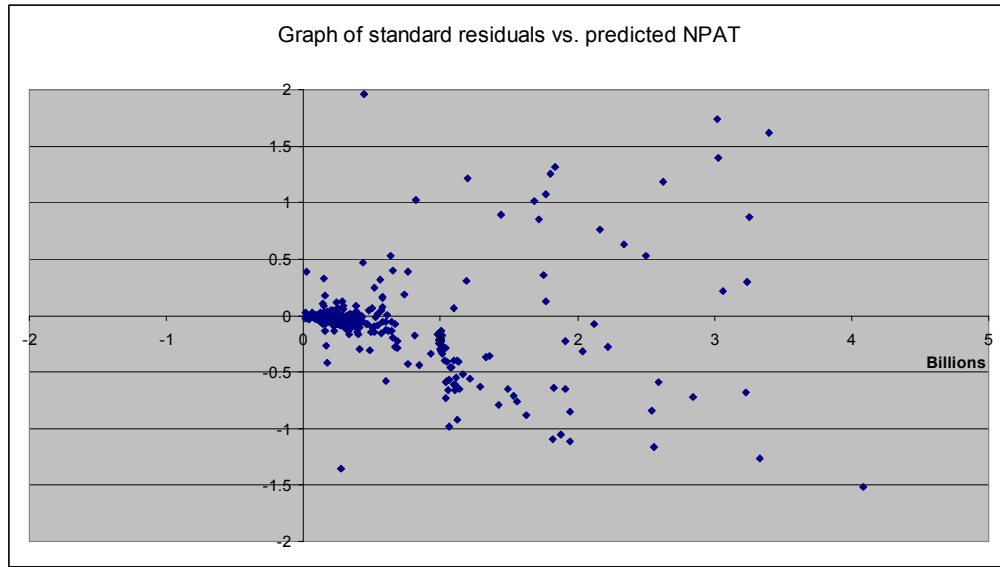
The scale parameter was estimated by the squared root of DEVIANCE/DOF.

Lagrange Multiplier Statistics

Parameter	Chi-Squared	Pr > ChiSq
Scale	0.0369	0.8477

LR Statistics For Type 3 Analysis

Source	Num DF	Den DF	F Value	Pr > F	Chi-Squared	Pr > ChiSq
Operating_Cash_Flow	1	491	213.37	<.0001	213.37	<.0001
Sector_Cat	4	491	9.38	<.0001	37.52	<.0001



Model 4: NPAT = Sector + Large Cap + Operating Cash flow

Model Information

Model 4: NPAT = Sector + Large Cap + Operating Cash flow

Data Set

ASPECT.OUTPUT_YEAR		
Distribution	Normal	
Link Function	Identity	
Dependent Variable	NPAT	NPAT
Scale Weight Variable	Market_Cap	Market Cap
Number of Observations Read	497	
Number of Observations Used	497	
Sum of Weights	3132421	

Class Level Information

Class	Levels	Values
large_cap	2	0 1
Sector_Cat	5	1 2 3 4 5

Criteria For Assessing Goodness Of Fit

Criterion	DF	Value	Value/DF
Deviance	490	6.63053E+24	1.35317E+22
Scaled Deviance	490	490	1
Pearson Chi-Squared	490	6.63053E+24	1.35317E+22
Scaled Pearson X2	490	490	1
Log Likelihood		(11,454.95)	

Analysis Of Parameter Estimates

Parameter	DF	Estimate	Standard Error	Wald 95% Confidence Limits		Chi-Squared	Pr > ChiSq
Intercept	1	296,170,000	266,150,000	(225,500,000)	817,830,000	1.240	0.266
Operating_Cash_Flow	1	0.41	0.03	0.35	0.47	164.810	<.0001
Sector_Cat	1 1	(132,100,000)	345,670,000	(809,600,000)	545,440,000	0.150	0.702
Sector_Cat	2 1	(34,210,000)	279,710,000	(582,400,000)	514,010,000	0.010	0.903
Sector_Cat	3 1	734,940,000	273,960,000	197,990,000	1,271,900,000	7.200	0.007
Sector_Cat	4 1	39,247,437	291,850,000	(532,800,000)	611,260,000	0.020	0.893
Sector_Cat	5 0	-	-	-	-	.	.
large_cap	0 1	(304,300,000)	202,610,000	(701,400,000)	92,785,157	2.260	0.133
large_cap	1 0	-	-	-	-	.	.
Scale	0	116,300,000,000	-	116,300,000,000	116,300,000,000		

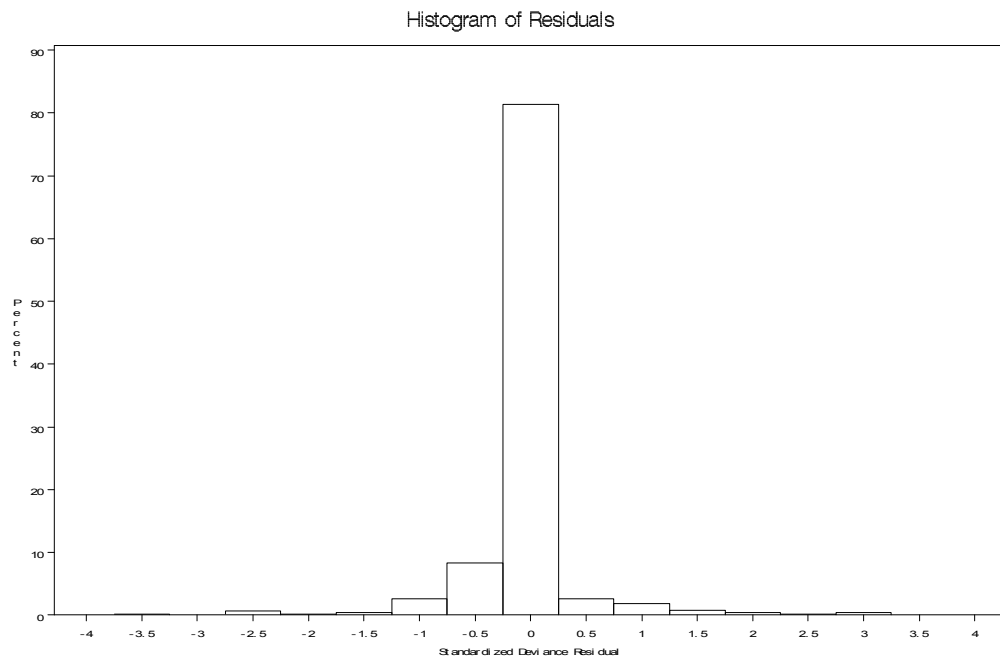
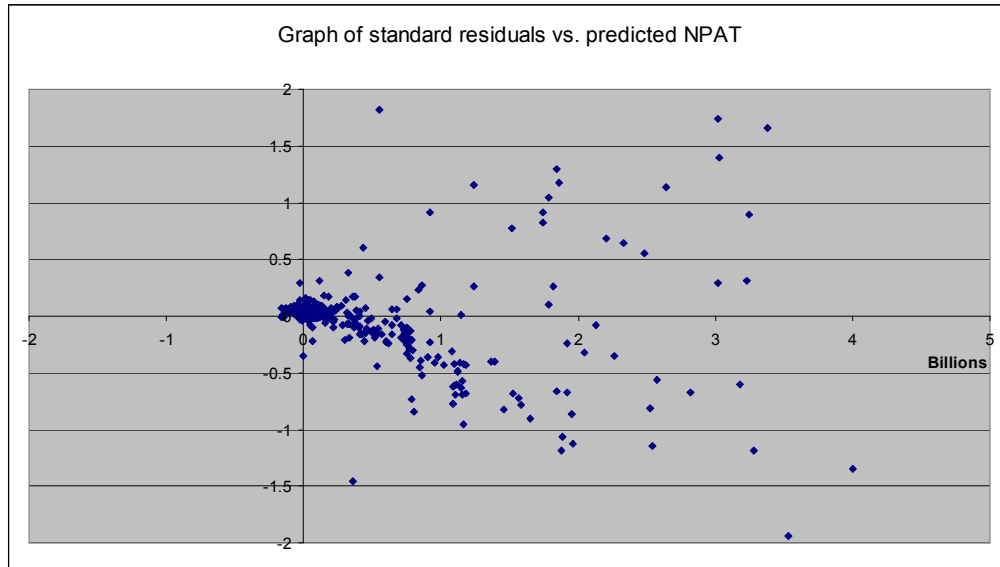
The scale parameter was estimated by the squared root of DEVIANCE/DOF.

Lagrange Multiplier Statistics

Parameter	Chi-Squared	Pr > ChiSq
Scale	0.0504	0.8224

LR Statistics For Type 3 Analysis

Source	Num DF	Den DF	F Value	Pr > F	Chi-Squared	Pr > ChiSq
Operating_Cash_Flow	1	490	164.81	<.0001	164.81	<.0001
Sector_Cat	4	490	6.42	<.0001	25.66	<.0001
large_cap	1	490	2.26	0.1337	2.26	0.1331



Model 5: NPAT = Sector + Year + Operating Cash flow

Model Information

Model 5: NPAT = Sector + Year + Operating Cash flow

Data Set

ASPECT.OUTPUT_YEAR		
Distribution	Normal	
Link Function	Identity	
Dependent Variable	NPAT	NPAT
Scale Weight Variable	Market_Cap	Market Cap
Number of Observations read	497	
Number of Observations Used	497	
Sum of Weights	3132421	

Class Level Information

Class	Levels	Values
Year	7	1998 1999 2000 2001 2002 2003 2004
Sector_Cat	5	1 2 3 4 5

Criteria - Assessing Goodness Of Fit

Criterion	DF	Value	Value/DF
Deviance	485	6.13383E+24	1.26471E+22
Scaled Deviance	485	485	1
Pearson Chi-Squared	485	6.13383E+24	1.26471E+22
Scaled Pearson X2	485	485	1
Log Likelihood		(11,435.65)	

Analysis Of Parameter Estimates

Parameter	DF	Estimate	Standard Error	Wald 95% Confidence Limits		Chi-Squared	Pr > ChiSq
Intercept	1	384,450,000	256,690,000	(118,700,000)	887,550,000	2.240	0.134
Operating_Cash_Flow	1	0.45	0.03	0.39	0.50	242.000	<.0001
Year 1998	1	(363,900,000)	236,750,000	(827,900,000)	100,150,000	2.360	0.124
Year 1999	1	(359,400,000)	235,320,000	(820,600,000)	101,810,000	2.330	0.127
Year 2000	1	(29,550,000)	230,390,000	(481,100,000)	422,000,000	0.020	0.898
Year 2001	1	(326,900,000)	222,070,000	(762,200,000)	108,320,000	2.170	0.141
Year 2002	1	(1,252,000,000)	226,100,000	(1,695,000,000)	(809,100,000)	30.680	<.0001
Year 2003	1	1,129,350	233,500,000	(456,500,000)	458,780,000	0.000	0.996
Year 2004	0	-	-	-	-	-	-
Sector_Cat 1	1	(27,540,000)	329,530,000	(673,400,000)	618,330,000	0.010	0.933
Sector_Cat 2	1	37,161,785	265,790,000	(483,800,000)	558,090,000	0.020	0.889
Sector_Cat 3	1	892,060,000	244,510,000	412,840,000	1,371,300,000	13.310	0.000
Sector_Cat 4	1	64,983,635	278,720,000	(481,300,000)	611,260,000	0.050	0.816
Sector_Cat 5	0	-	-	-	-	-	-
Scale	0	112,500,000,000	-	112,500,000,000	112,500,000,000		

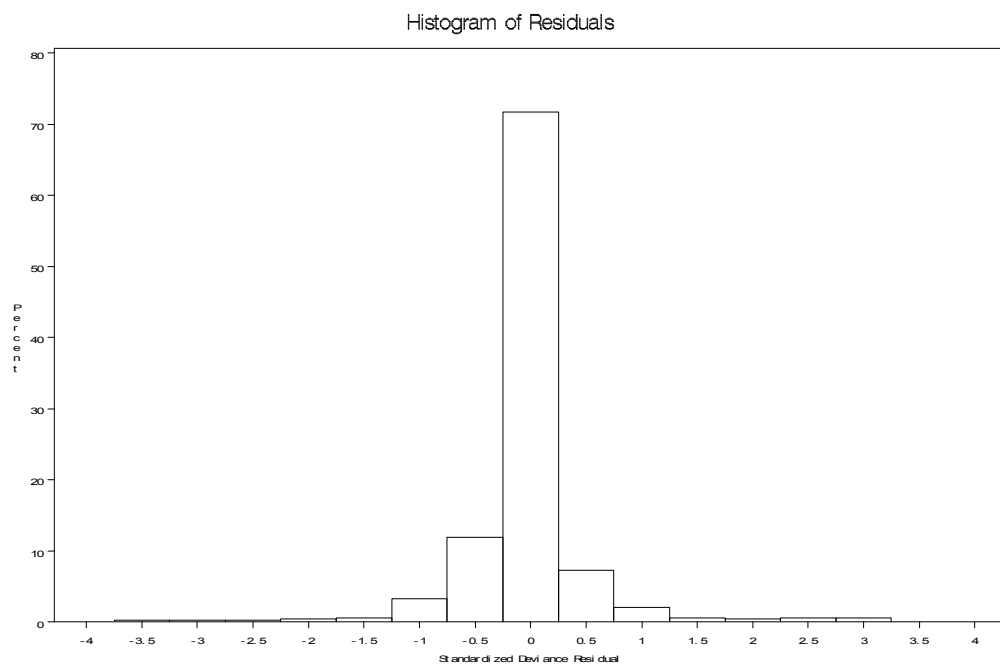
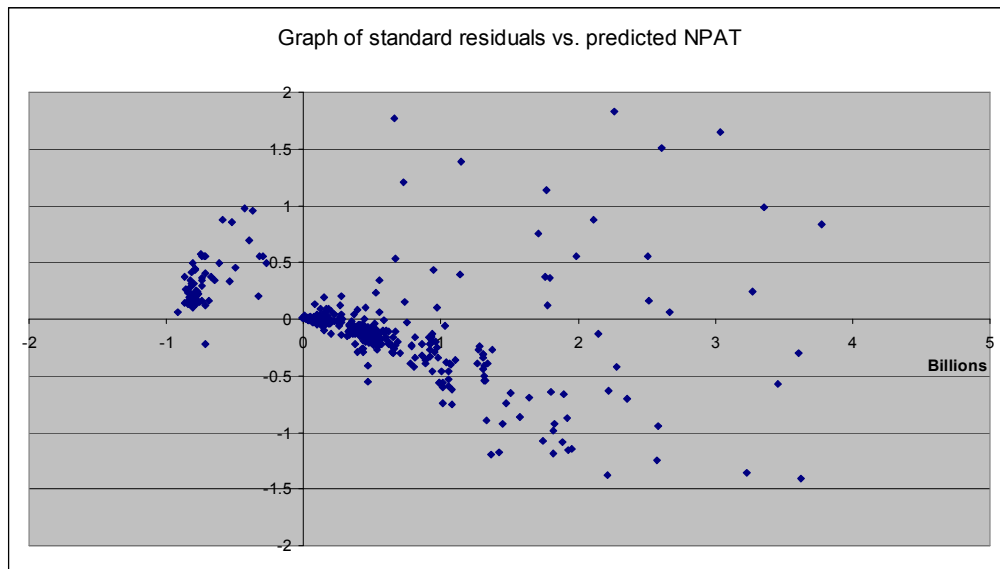
The scale parameter was estimated by the squared root of DEVIANCE/DOF.

Lagrange Multiplier Statistics

Parameter	Chi-Squared	Pr > ChiSq
Scale	0.1503	0.6982

LR Statistics For Type 3 Analysis

Source	Num DF	Den DF	F Value	Pr > F	Chi-Squared	Pr > ChiSq
Operating_Cash_Flow	1	485	242	<.0001	242	<.0001
Year	6	485	6.95	<.0001	41.69	<.0001
Sector_Cat	4	485	10.45	<.0001	41.79	<.0001



Model 6: NPAT = Sector + Large Cap + Year + Operating Cash flow

Model Information

Model 6: NPAT = Sector + Large Cap + Year + Operating Cash flow

Data Set

ASPECT.OUTPUT_YEAR		
Distribution	Normal	
Link Function	Identity	
Dependent Variable	NPAT	NPAT
Scale Weight Variable	Market_Cap	Market Cap
Nmbr of Observations read	497	
Nmbr of Observations Used	497	
Sum of Weights	3132421	

Class Level Information

Class	Levels	Values
Year	7	1998 1999 2000 2001 2002 2003 2004
Sector_Cat	5	1 2 3 4 5
large_cap	2	0 1

Criteria Assessing Goodness Fit

Criterion	DF	Value	Value/DF
Deviance	484	6.11138E+24	1.26268E+22
Scaled Deviance	484	484	1
Pearson Chi-Squared	484	6.11138E+24	1.26268E+22
Scaled Pearson X2	484	484	1
Log Likelihood		(11,434.75)	

Analysis - Parameter Est

Parameter	DF	Estimate	Standard Error	Wald 95% Confidence Limits		Chi-Squared	Pr > ChiSq
Intercept	1	571,630,000	292,390,000	(1,435,309)	1,144,700,000	3.820	0.051
Operating_Cash_Flow	1	0.431	0.031	0.370	0.493	188.610	<.0001
Year	1998	(373,600,000)	236,680,000	(837,500,000)	90,236,783	2.490	0.114
Year	1999	(359,800,000)	235,130,000	(820,600,000)	101,070,000	2.340	0.126
Year	2000	(34,590,000)	230,230,000	(485,800,000)	416,660,000	0.020	0.881
Year	2001	(339,200,000)	222,080,000	(774,400,000)	96,100,554	2.330	0.127
Year	2002	(1,248,000,000)	225,940,000	(1,691,000,000)	(805,100,000)	30.510	<.0001
Year	2003	(10,230,000)	233,470,000	(467,800,000)	447,360,000	0.000	0.965
Year	2004	-	-	-	-	-	-
Sector_Cat	1	(102,800,000)	334,070,000	(757,500,000)	551,990,000	0.090	0.758
Sector_Cat	2	(30,140,000)	270,330,000	(560,000,000)	499,690,000	0.010	0.911
Sector_Cat	3	755,930,000	264,780,000	236,960,000	1,274,900,000	8.150	0.004
Sector_Cat	4	(8,039,503)	283,830,000	(564,300,000)	548,250,000	-	0.977
Sector_Cat	5	-	-	-	-	-	-
large_cap	0	(261,600,000)	196,200,000	(646,200,000)	122,920,000	1.780	0.182
large_cap	1	-	-	-	-	-	-
Scale	0	112,400,000,000	-	112,400,000,000	112,400,000,000	-	-

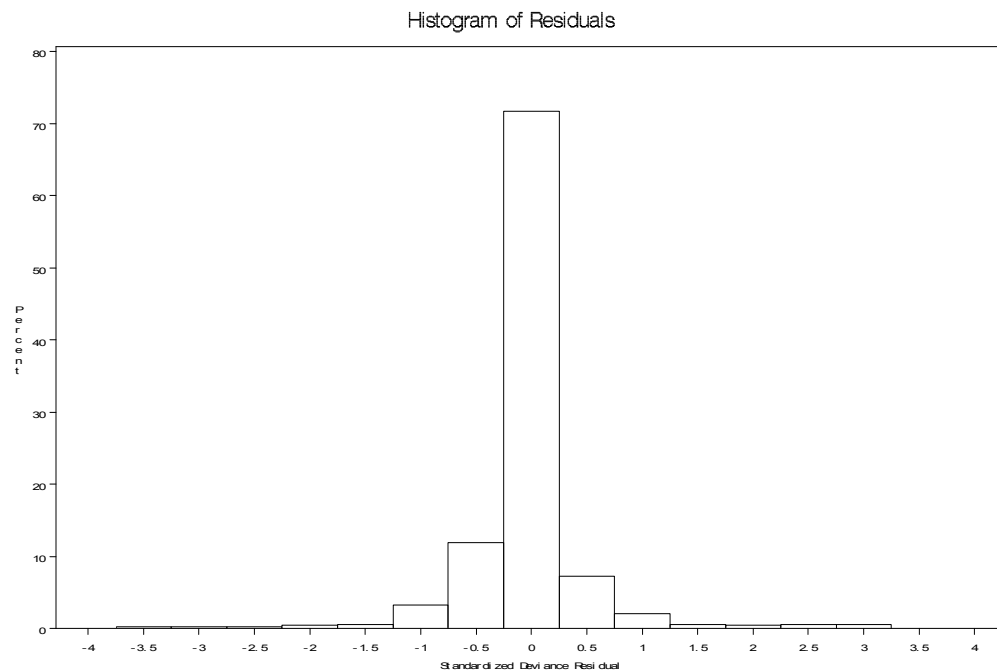
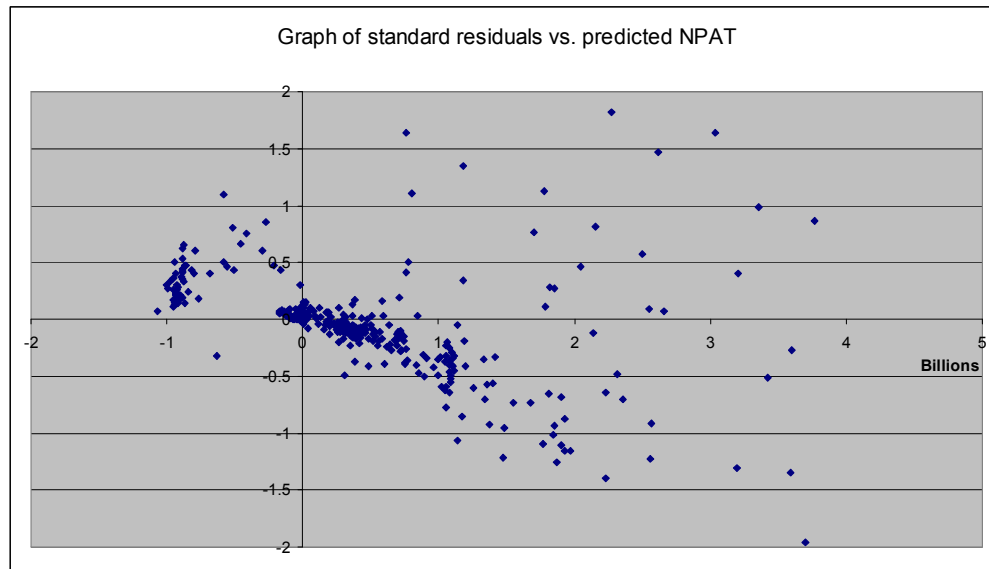
The scale parameter was estimated by the squared root of DEVIANCE/DOF.

Lagrange Multiplier Stats

Parameter	Chi-Squared	Pr > ChiSq
Scale	0.177	0.674

LR Statistics For Type 3 Analysis

Source	Num DF	Den DF	F Value	Pr > F	Chi-Squared	Pr > ChiSq
Operating_Cash_Flow	1	484	188.61	<.0001	188.61	<.0001
Year	6	484	6.85	<.0001	41.11	<.0001
Sector_Cat	4	484	7.39	<.0001	29.56	<.0001
large_cap	1	484	1.78	0.183	1.78	0.1824



Model 7: (NPAT > 0) = Sector + Operating Cash flow

Model Information

Model 7: (NPAT > 0) = Sector + Operating Cash flow

Data Set

WORK.TEMP		
Distribution	Gamma	
Link Function	Log	
Dependent Variable	NPAT	NPAT
Scale Weight Variable	Market_Cap	Market Cap
Number of Observations Read	439	
Number of Observations Used	439	
Sum of Weights	2973119	

Class Level Information

Class	Levels	Values
Sector_Cat	5	1 2 3 4 5

Criteria For Assessing Goodness Of Fit

Criterion	DF	Value	Value/DF
Deviance	433	1,861,573	4,299
Scaled Deviance	433	506.7819	1.1704
Pearson Chi-Squared	433	1,590,548	3,673
Scaled Pearson X2	433	433	1
Log Likelihood		(9,028.04)	

Analysis Of Parameter Estimates

Parameter	DF	Estimate	Standard Error	Wald 95% Confidence Limits		Chi-Squared	Pr > ChiSq
Intercept	1	19.349	0.123	19.109	19.590	24,828	<.0001
Operating_Cash_Flow	1	-	-	-	-	181	<.0001
Sector_Cat	1	0.100	0.181	(0.255)	0.454	0.300	0.582
Sector_Cat	2	0.703	0.151	0.407	1.000	22	<.0001
Sector_Cat	3	1.613	0.135	1.348	1.877	143	<.0001
Sector_Cat	4	1.085	0.160	0.772	1.398	46	<.0001
Sector_Cat	5	-	-	-	-	.	.
Scale	0	0.000	-	0.000	0.000	.	.

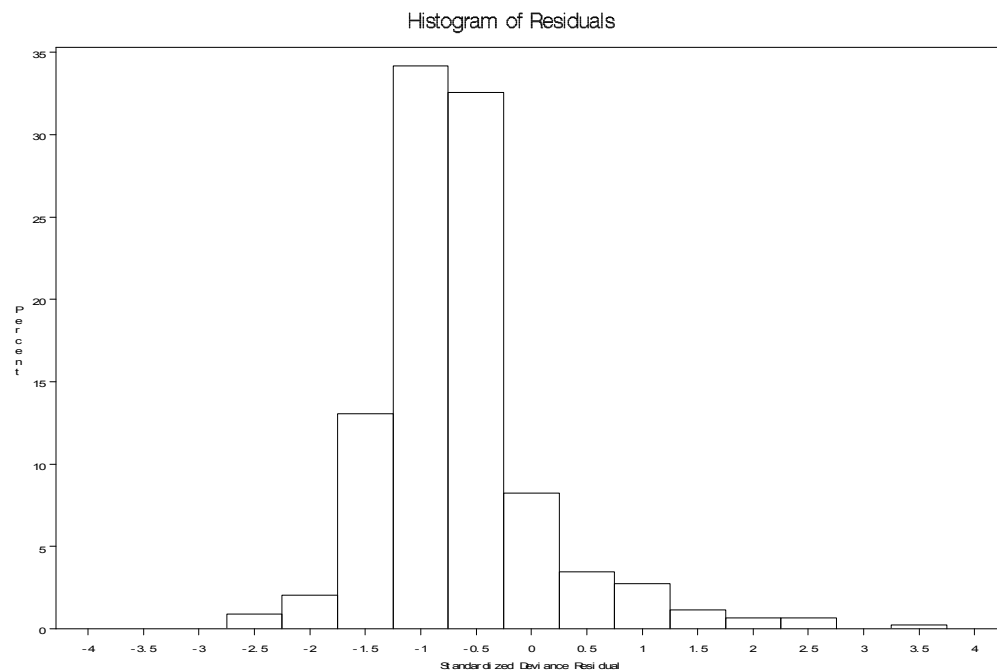
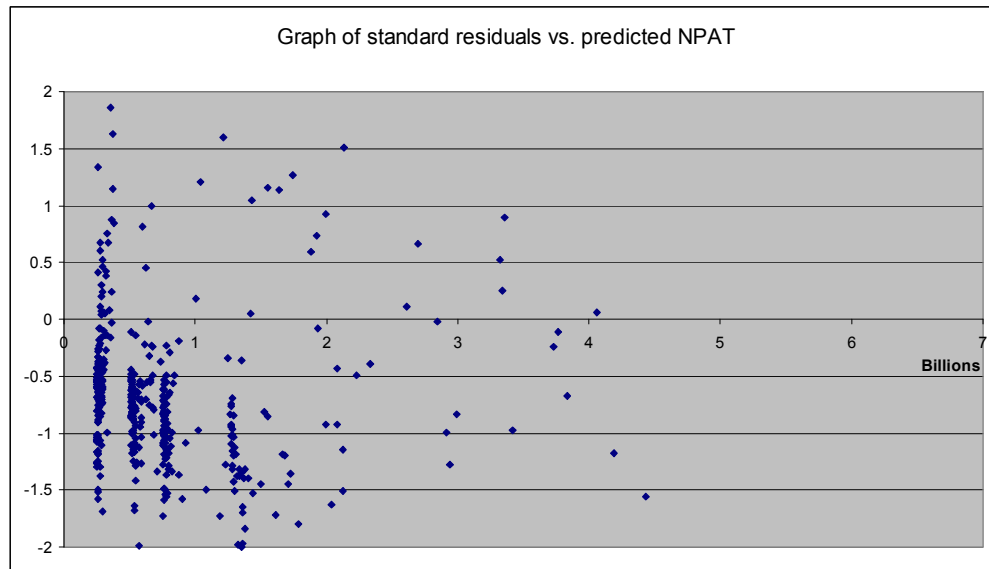
The Gamma scale parameter was estimated by DOF/Pearson's Chi-Squared

Lagrange Multiplier Statistics

Parameter	Chi-Squared	Pr > ChiSq
Scale	2.2965	0.1297

LR Statistics For Type 3 Analysis

Source	Num DF	Den DF	F Value	Pr > F	Chi-Squared	Pr > ChiSq
Operating_Cash_Flow	1	433	.	.	.	.
Sector_Cat	4	433	52.11	<.0001	208.42	<.0001



Model 8: (NPAT > 0) = Year + Operating Cash flow

Model Information

Model 8: (NPAT > 0) = Year + Operating Cash flow

Data Set

WORK.TEMP		
Distribution	Gamma	
Link Function	Log	
Dependent Variable	NPAT	NPAT
Scale Weight Variable	Market_Cap	Market Cap
Number of Observations Read	439	
Number of Observations Used	439	
Sum of Weights	2973119	

Class Level Information

Class	Levels	Values
Year	7	1998 1999 2000 2001 2002 2003 2004

Criteria For Assessing Goodness Of Fit

Criterion	DF	Value	Value/DF
Deviance	431	2,479.986	5,754
Scaled Deviance	431	520.9214	1.2086
Pearson Chi-Squared	431	2,051.892	4,761
Scaled Pearson X2	431	431	1
Log Likelihood		(9,108.93)	

Analysis Of Parameter Estimates

Parameter	DF	Estimate	Standard Error	Wald 95% Confidence		Chi-Squared	Pr > ChiSq
				Limits			
Intercept	1	20.701	0.098	20.508	20.894	44,303	<.0001
Operating_Cash_Flow	1	-	-	-	-	221.870	<.0001
Year	1998	(0.379)	0	(0.666)	(0.092)	6.710	0.010
Year	1999	(0.408)	0	(0.701)	(0.115)	7.430	0.006
Year	2000	(0.146)	0	(0.427)	0.136	1.030	0.311
Year	2001	(0.351)	0	(0.628)	(0.075)	6.220	0.013
Year	2002	(0.413)	0	(0.701)	(0.124)	7.860	0.005
Year	2003	0.252	0.146	(0.034)	0.539	2.980	0.085
Year	2004	-	-	-	-	.	.
Scale	0	0.000	-	0.000	0.000		

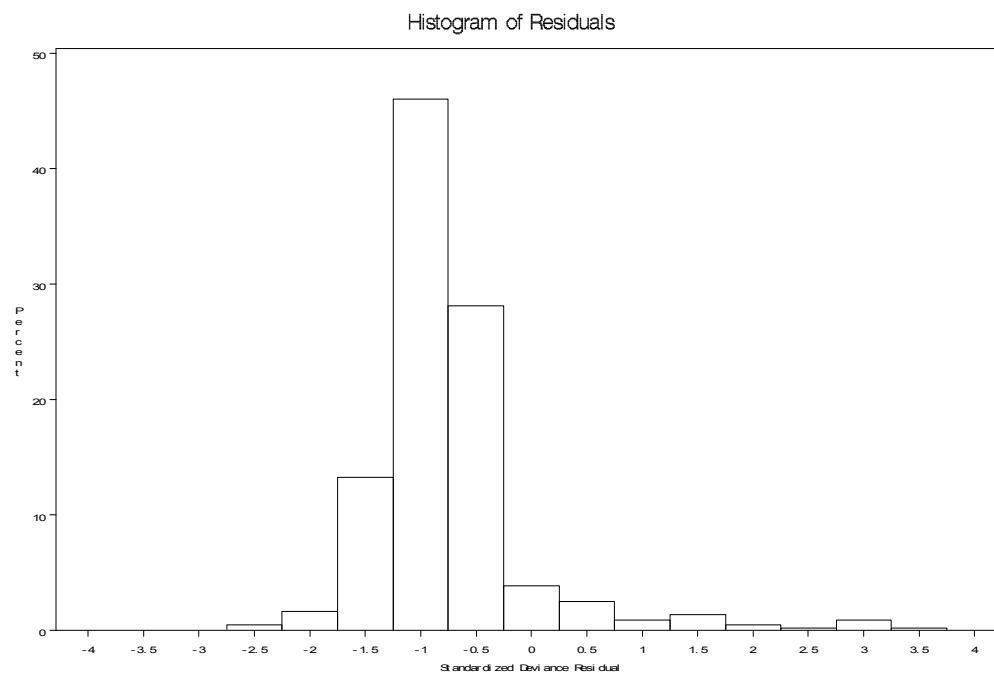
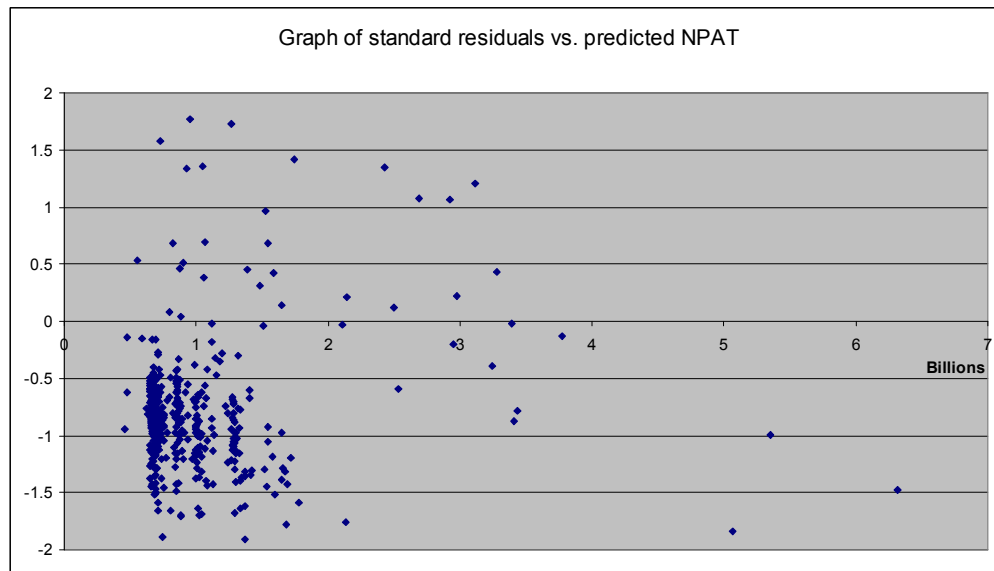
The Gamma scale parameter was estimated by DOF/Pearson's Chi-Squared

Lagrange Multiplier Statistics

Parameter	Chi-Squared	Pr > ChiSq
Scale	2.5467	0.1105

LR Statistics For Type 3 Analysis

Source	Num DF	Den DF	F Value	Pr > F	Chi-Squared	Pr > ChiSq
Operating_Cash_Flow	1	431	.	.	.	.
Year	6	431	5.15	<.0001	30.92	<.0001



Model 9 : (NPAT > 0) = Large Cap + Operating Cash flow

Model Information

Model 9 : (NPAT > 0) = Large Cap + Operating Cash flow

Data Set

WORK.TEMP		
Distribution	Gamma	
Link Function	Log	
Dependent Variable	NPAT	NPAT
Scale Weight Variable	Market_Cap	Market Cap
Number of Observations Read	439	
Number of Observations Used	439	
Sum of Weights	2973119	

Class Level Information

Class	Levels	Values
large_cap	2	0 1

Criteria For Assessing Goodness Of Fit

Criterion	DF	Value	Value/DF
Deviance	436	1,584,664	3,635
Scaled Deviance	436	467.407	1.072
Pearson Chi-Squared	436	1,478,184	3,390
Scaled Pearson X2	436	436	1
Log Likelihood		(8,985.99)	

Analysis Of Parameter Estimates

Parameter	DF	Estimate	Standard Error	Wald 95% Confidence Limits		Chi-Squared
Intercept	1	20.920	0.055	20.812	21.027	145,169
Operating_Cash_Flow	1	-	-	-	-	132.160
large_cap	0 1	(1.901)	0.093	(2.082)	(1.720)	422.660
large_cap	1 0	-	-	-	-	.
Scale	0	0.000	-	0.000	0.000	

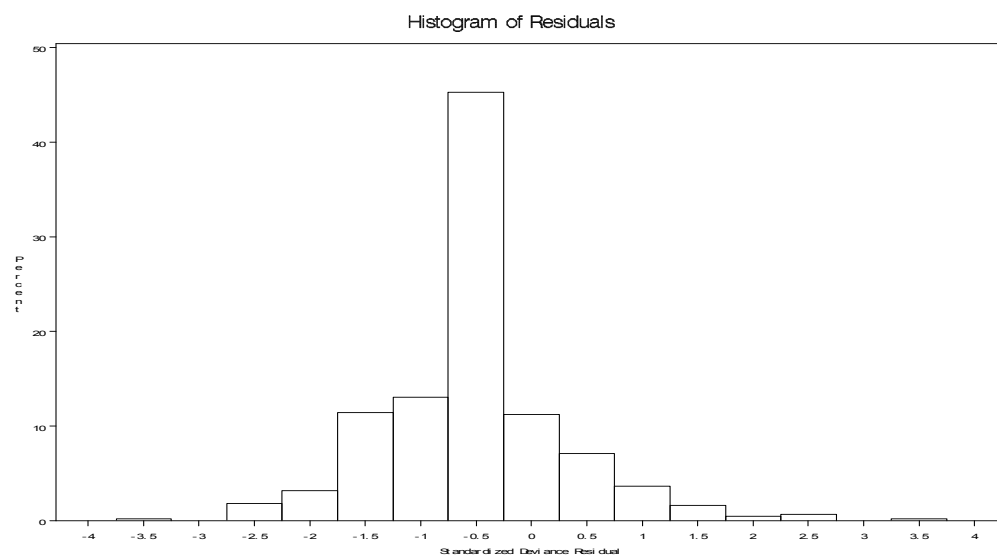
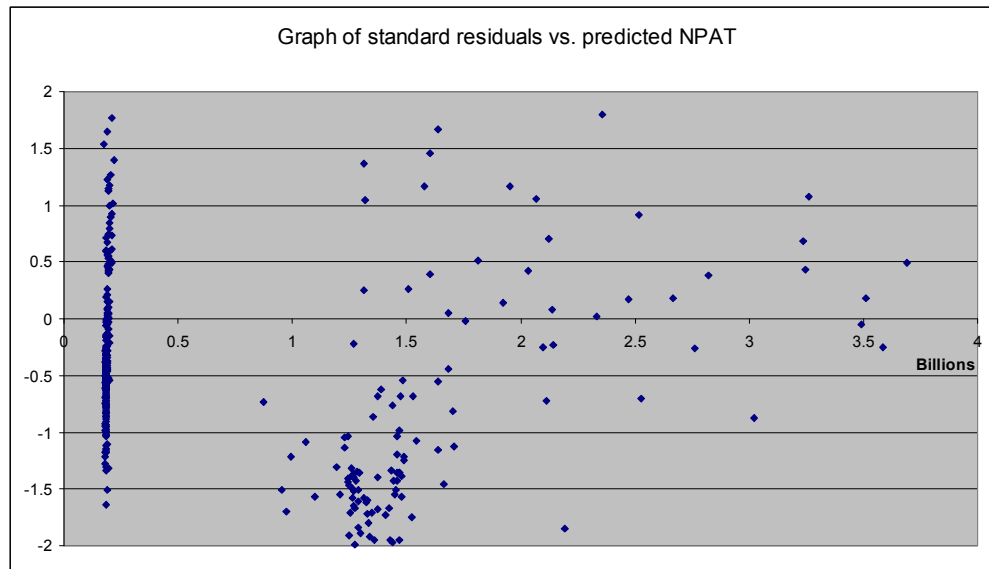
The Gamma scale parameter was estimated by DOF/Pearson's Chi-Squared

Lagrange Multiplier Statistics

Parameter	Chi-Squared	Pr > ChiSq
Scale	6.1954	0.0128

LR Statistics For Type 3 Analysis

Source	Num DF	Den DF	F Value	Pr > F	Chi-Squared	Pr > ChiSq
Operating_Cash_Flow	1	436	.	.	.	.
large_cap	1	436	307.5	<.0001	307.5	<.0001



Model 10 : (NPAT > 0) = Sector + Large Cap + Operating Cash flow

Model Information

Model 10 : (NPAT > 0) = Sector + Large Cap + Operating Cash flo

Data Set

WORK.TEMP		
Distribution	Gamma	
Link Function	Log	
Dependent Variable	NPAT	NPAT
Scale Weight Variable	Market_Cap	Market Cap
Number of Observations Read	439	
Number of Observations Used	439	
Sum of Weights	2973119	

Class Level Information

Class	Levels	Values
large_cap	2	0 1
Sector_Cat	5	1 2 3 4 5

Criteria For Assessing Goodness Of Fit

Criterion	DF	Value	Value/DF
Deviance	432	1,349,799	3,125
Scaled Deviance	432	463.1095	1.072
Pearson Chi-Squared	432	1,259,126	2,915
Scaled Pearson X2	432	432	1
Log Likelihood		(8,942.25)	

Analysis Of Parameter Estimates

Parameter	DF	Estimate	Standard Error	Wald 95% Confidence Limits		Chi-Squared	Pr > ChiSq
Intercept	1	20.230	0.135	19.966	20.495	22,434	<.0001
Operating_Cash_Flow	1	-	-	-	-	114.870	<.0001
large_cap	0 1	(1.442)	0.103	(1.643)	(1.241)	196.960	<.0001
large_cap	1 0	-	-	-	-	.	.
Sector_Cat	1 1	(0.280)	0.163	(0.600)	0.040	2.940	0.087
Sector_Cat	2 1	0.296	0.137	0.028	0.564	4.680	0.031
Sector_Cat	3 1	0.838	0.138	0.568	1.109	36.910	<.0001
Sector_Cat	4 1	0.567	0.149	0.275	0.859	14.470	0.000
Sector_Cat	5 0	-	-	-	-	.	.
Scale	0	0.000	-	0.000	0.000	.	.

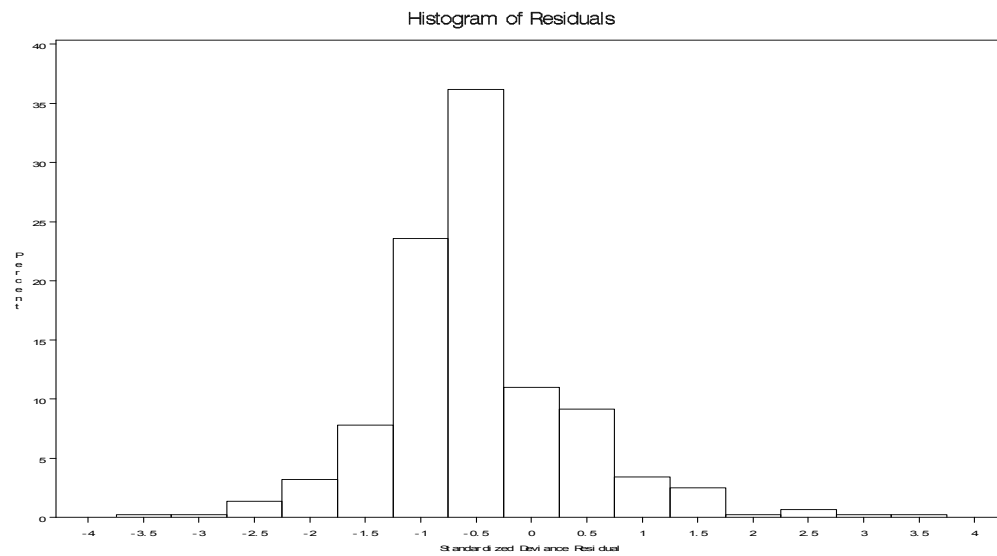
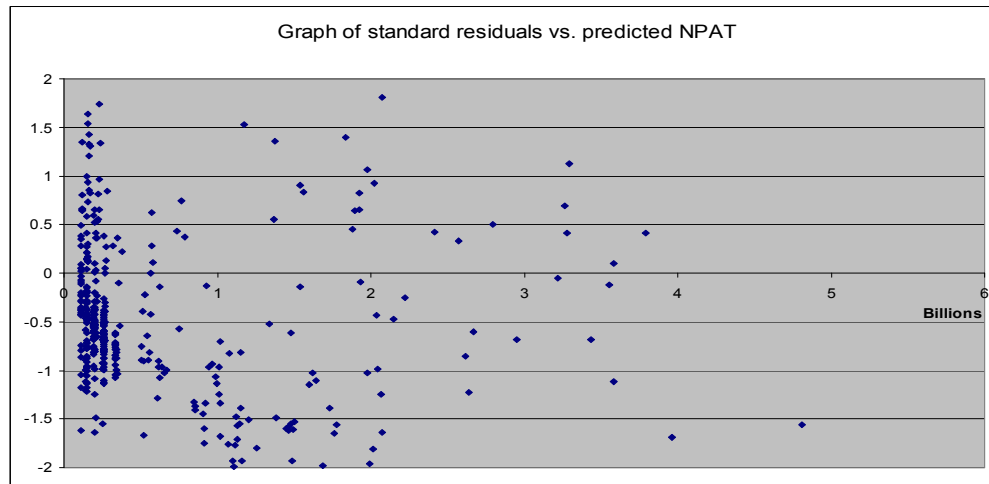
The Gamma scale parameter was estimated by DOF/Pearson's Chi-Squared

Lagrange Multiplier Statistics

Parameter	Chi-Squared	Pr > ChiSq
Scale	5.5575	0.0184

LR Statistics For Type 3 Analysis

Source	Num DF	Den DF	F Value	Pr > F	Chi-Squared	Pr > ChiSq
Operating_Cash_Flow	1	432	.	.	.	.
large_cap	1	432	175.59	<.0001	175.59	<.0001
Sector_Cat	4	432	20.15	<.0001	80.58	<.0001



Model 11: (NPAT > 0) = Sector + Year + Operating Cash flow

Model Information

Model 11: (NPAT > 0) = Sector + Year + Operating Cash flow

Data Set

WORK.TEMP		
Distribution	Gamma	
Link Function	Log	
Dependent Variable	NPAT	NPAT
Scale Weight Variable	Market_Cap	Market Cap
Number of Observations Read	439	
Number of Observations Used	439	
Sum of Weights	2973119	

Class Level Information

Class	Levels	Values
Year	7	1998 1999 2000 2001 2002 2003 2004
Sector_Cat	5	1 2 3 4 5

Criteria For Assessing Goodness Of Fit

Criterion	DF	Value	Value/DF
Deviance	427	1,724,372	4,038
Scaled Deviance	427	570.8428	1.3369
Pearson Chi-Squared	427	1,289,859	3,021
Scaled Pearson X2	427	427	1
Log Likelihood		(9,005.89)	

Analysis Of Parameter Estimates

Parameter	DF	Estimate	Standard Error	Wald 95% Confidence Limits		Chi-Squared	Pr > ChiSq
Intercept	1	19.545	0.127	19.296	19.794	23.652	<.0001
Operating_Cash_Flow	1	-	-	-	-	241.240	<.0001
Sector_Cat	1	0.133	0.165	(0.190)	0.456	0.650	0.420
Sector_Cat	2	0.652	0.138	0.382	0.923	22.340	<.0001
Sector_Cat	3	1.593	0.124	1.351	1.835	166.400	<.0001
Sector_Cat	4	1.054	0.149	0.762	1.345	50.110	<.0001
Sector_Cat	5	-	-	-	-	-	-
Year	1998	(0.458)	0.119	(0.690)	(0.225)	14.900	0.000
Year	1999	(0.444)	0.119	(0.677)	(0.211)	13.940	0.000
Year	2000	(0.215)	0.114	(0.439)	0.009	3.530	0.060
Year	2001	(0.388)	0.112	(0.608)	(0.168)	11.960	0.001
Year	2002	(0.525)	0.117	(0.755)	(0.295)	20.000	<.0001
Year	2003	0.087	0.117	(0.143)	0.317	0.550	0.459
Year	2004	-	-	-	-	-	-
Scale	0	0.000	-	0.000	0.000	-	-

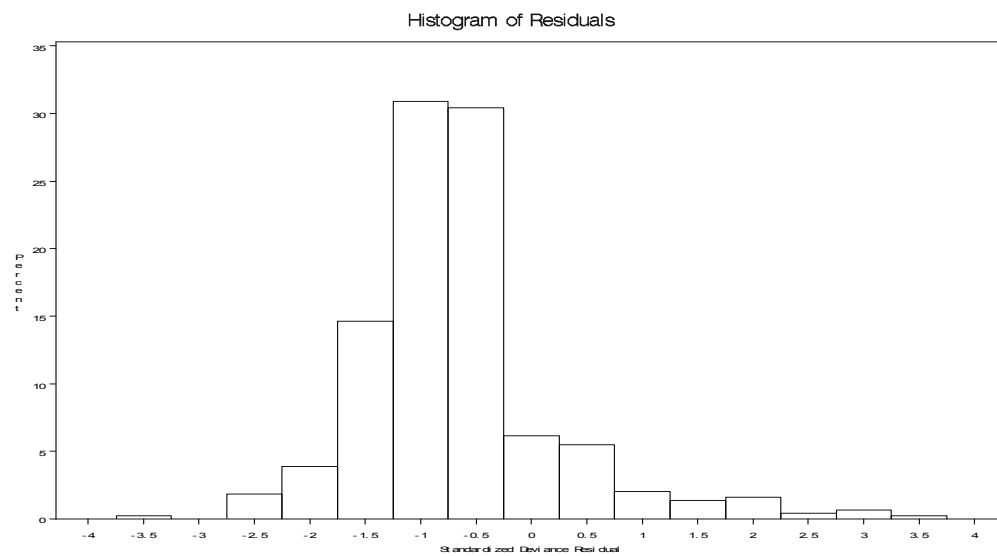
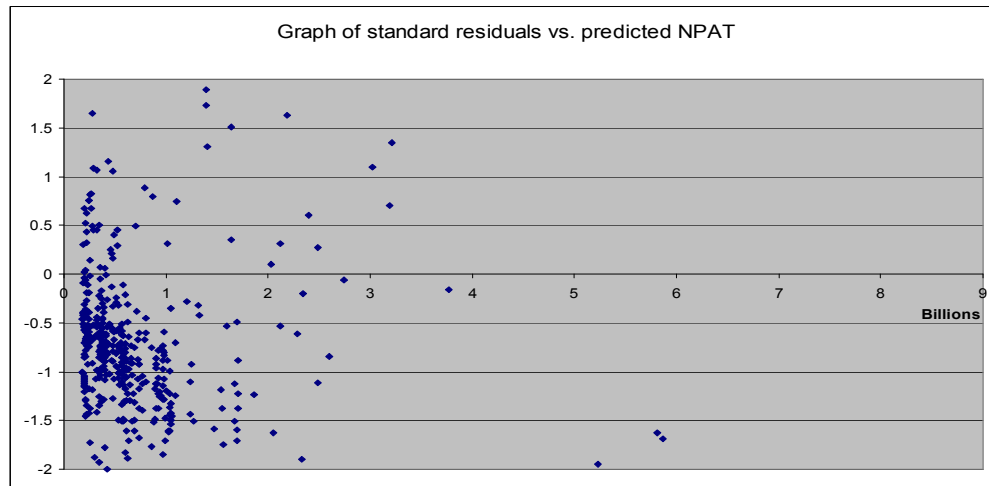
The Gamma scale parameter was estimated by DOF/Pearson's Chi-Squared

Lagrange Multiplier Statistics

Parameter	Chi-Squared	Pr > ChiSq
Scale	0.4403	0.507

LR Statistics For Type 3 Analysis

Source	Num DF	Den DF	F Value	Pr > F	Chi-Squared	Pr > ChiSq
Operating_Cash_Flow	1	427	-	-	-	-
Sector_Cat	4	427	62.54	<.0001	250.14	<.0001
Year	6	427	7.57	<.0001	45.42	<.0001



Model 12: (NPAT > 0) = Large Cap + Year + Operating Cash flow

Model Information

Model 12: (NPAT > 0) = Large Cap + Year + Operating Cash flow

Data Set

WORK.TEMP		
Distribution	Gamma	
Link Function	Log	
Dependent Variable	NPAT	NPAT
Scale Weight Variable	Market_Cap	Market Cap
Number of Observations Read	497	
Number of Observations Used	497	
Sum of Weights	3132421	

Class Level Information

Class	Levels	Values
Year	7	1998 1999 2000 2001 2002 2003 2004
large_cap	2	0 1

Criteria For Assessing Goodness Of Fit

Criterion	DF	Value	Value/DF
Deviance	430	1,514,534	3,522
Scaled Deviance	430	494.3836	1.1497
Pearson Chi-Squared	430	1,317,296	3,063
Scaled Pearson X2	430	430	1
Log Likelihood		(8,971.51)	

Analysis Of Parameter Estimates

Parameter	DF	Estimate	Standard Error	Wald 95% Confidence Limits		Chi-Squared	Pr > ChiSq
Intercept	1	21.006	0.086	20.838	21.173	60,409.90	<.0001
Operating_Cash_Flow	1	-	-	-	-	155.370	<.0001
Year	1998	(0.348)	0.117	(0.577)	(0.119)	8.860	0.003
Year	1999	(0.283)	0.119	(0.516)	(0.050)	5.670	0.017
Year	2000	(0.105)	0.115	(0.329)	0.119	0.840	0.359
Year	2001	(0.273)	0.112	(0.494)	(0.053)	5.920	0.015
Year	2002	(0.235)	0.117	(0.465)	(0.005)	4.020	0.045
Year	2003	0.125	0.118	(0.106)	0.356	1.120	0.290
Year	2004	-	-	-	-	.	.
large_cap	0	(1.842)	0.090	(2.018)	(1.665)	419.490	<.0001
large_cap	1	-	-	-	-	.	.
Scale	0	0.000	-	0.000	0.000		

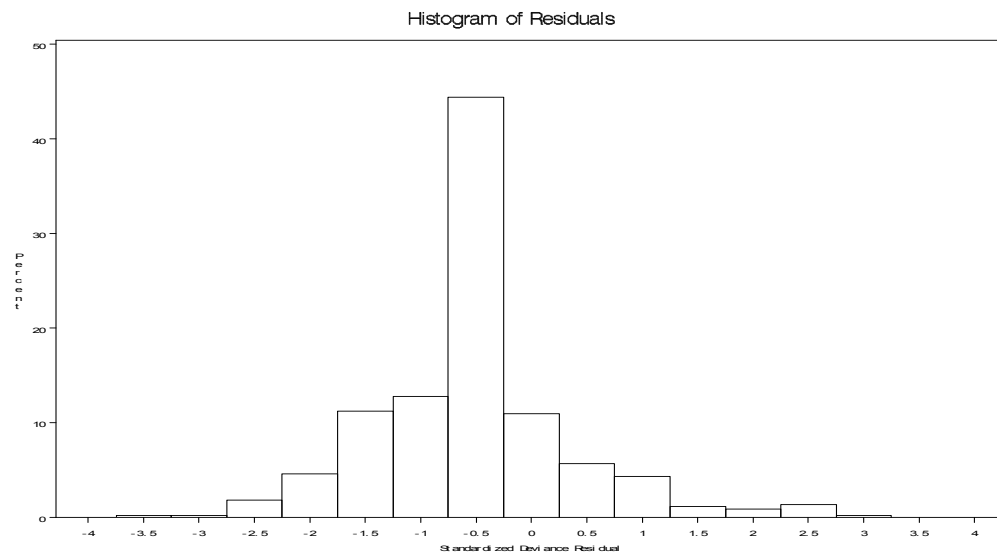
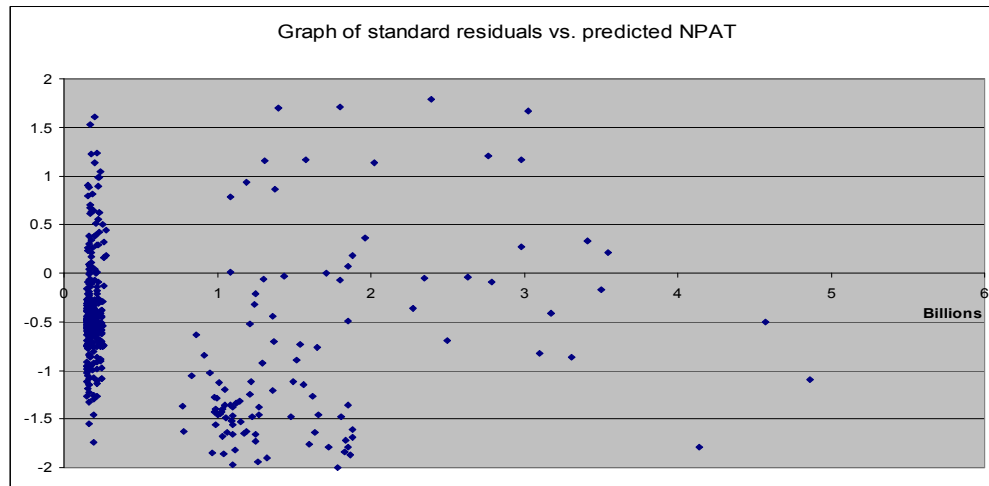
The Gamma scale parameter was estimated by DOF/Pearson's Chi-Squared

Lagrange Multiplier Statistics

Parameter	Chi-Squared	Pr > ChiSq
Scale	2.3928	0.1219

LR Statistics For Type 3 Analysis

Source	Num DF	Den DF	F Value	Pr > F	Chi-Squared	Pr > ChiSq
Operating_Cash_Flow	1	430	.	.	.	.
Year	6	430	3.82	0.001	22.89	0.0008
large_cap	1	430	315.15	<.0001	315.15	<.0001



Model 13: (NPAT > 0)=LargeCap+Yr+Sector+OperatingCashflow

Model Information

Model 13: (NPAT > 0) = Large Cap + Year + Sector + Operating Cash flow

Data Set

WORK.TEMP		
Distribution	Gamma	
Link Function	Log	
Dependent Variable	NPAT	NPAT
Scale Weight Variable	Market_Cap	Market Cap
Number of Observations Read	439	
Number of Observations Used	439	
Sum of Weights	2973119	

Class Level Information

Class	Levels	Values
Year	7	1998 1999 2000 2001 2002 2003 2004
large_cap	2	0 1
Sector_Cat	5	1 2 3 4 5

Criteria For Assessing Goodness Of Fit

Criterion	DF	Value	Value/DF
Deviance	426	1,269,264	2,979
Scaled Deviance	426	491.64	1.1541
Pearson Chi-Squared	426	1,099,801	2,582
Scaled Pearson X2	426	426	1
Log Likelihood		(8,923.67)	

Analysis Of Parameter Estimates

Parameter	DF	Estimate	Standard Error	Wald 95% Confidence Limits		Chi-Squared	Pr > ChiSq
Intercept	1	20.330	0.137	20.061	20.599	21958	<.0001
Operating_Cash_Flow	1	-	-	-	-	135.000	<.0001
Sector_Cat	1	(0.238)	0.154	(0.540)	0.064	2.390	0.122
Sector_Cat	2	0.301	0.129	0.049	0.554	5.470	0.019
Sector_Cat	3	0.874	0.130	0.619	1.128	45.200	<.0001
Sector_Cat	4	0.610	0.143	0.330	0.889	18.220	<.0001
Sector_Cat	5	0	-	-	-	-	-
Year	1998	(0.417)	0.109	(0.631)	(0.203)	14.550	0.000
Year	1999	(0.347)	0.110	(0.562)	(0.133)	10.050	0.002
Year	2000	(0.163)	0.105	(0.370)	0.044	2.390	0.122
Year	2001	(0.296)	0.103	(0.498)	(0.093)	8.170	0.004
Year	2002	(0.315)	0.109	(0.528)	(0.102)	8.380	0.004
Year	2003	0.066	0.109	(0.147)	0.278	0.370	0.544
Year	2004	0	-	-	-	-	-
large_cap	0	(1.370)	0.098	(1.563)	(1.178)	194.590	<.0001
large_cap	1	-	-	-	-	-	-
Scale	0	-	-	-	-	-	-

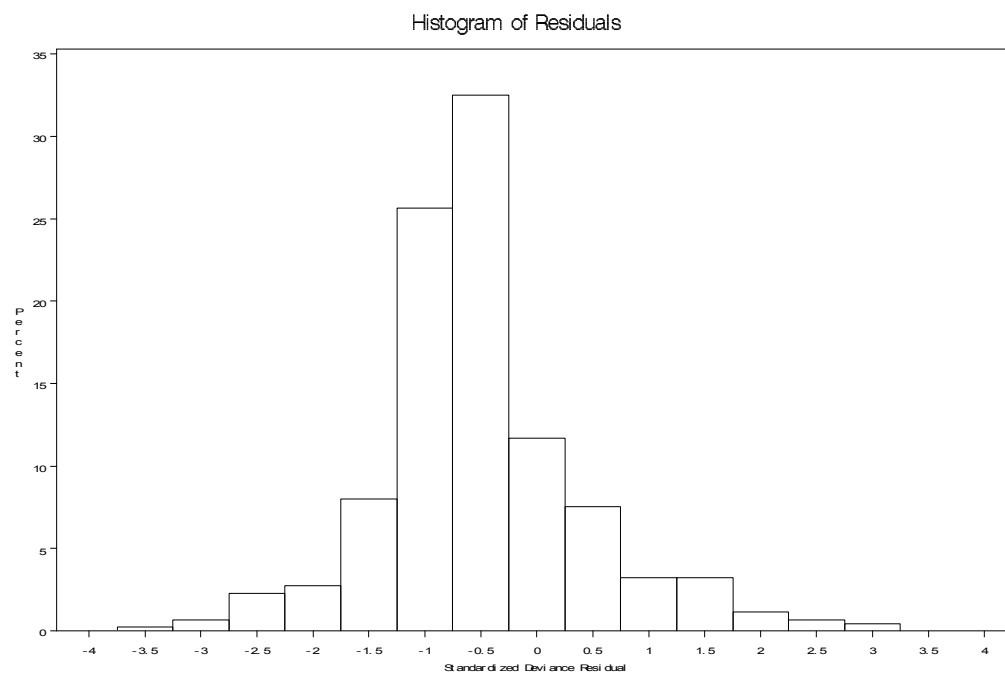
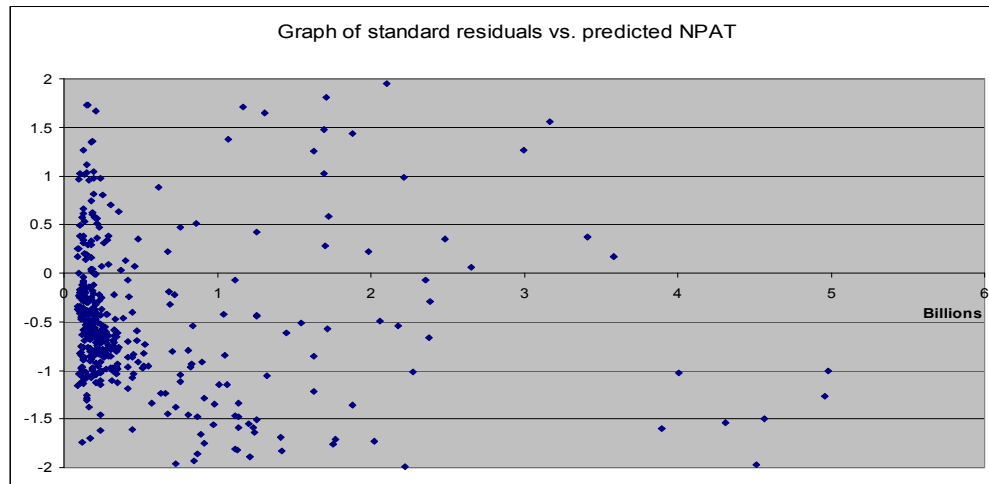
The Gamma scale parameter was estimated by DOF/Pearson's Chi-Squared

Lagrange Multiplier Statistics

Parameter	Chi-Squared	Pr > ChiSq
Scale	1.781	0.182

LR Statistics For Type 3 Analysis

Source	Num DF	Den DF	F Value	Pr > F	Chi-Squared	Pr > ChiSq
Operating_Cash_Flow	1	426	.	.	.	.
Sector_Cat	4	426	23.75	<.0001	95	<.0001
Year	6	426	5.2	<.0001	31.19	<.0001
large_cap	1	426	176.28	<.0001	176.28	<.0001



Model 14: Sales1 model - Cash= Revenue+ large_cap+ sector

Model Information

Model 14: sales1 model - Cash sales = Trading revenue + large_cap + sector

Data Set

WORK.SALES		
Distribution	Gamma	
Link Function	Log	
Dependent Variable	Cash_from_Sales	Cash from Sales
Scale Weight Variable	Market_Cap	Market_Cap
Number of Observations Read	485	
Number of Observations Used	485	
Sum of Weights	2806683	

Class Level Information

Class	Levels	Values
large_cap	2	0 1
Sector_Cat	5	1 2 3 4 5

Criteria For Assessing Goodness Of Fit

Criterion	DF	Value	Value/DF
Deviance	478	826,256	1,729
Scaled Deviance	478	725.3397	1.5174
Pearson Chi-Squared	478	544,504	1,139
Scaled Pearson X2	478	478	1
Log Likelihood		(10,899.45)	

Analysis Of Parameter Estimates

Parameter	DF	Estimate	Standard Error	Wald 95% Confidence Limits		Chi-Squared	Pr > ChiSq
Intercept	1	21.261	0.089	21.087	21.434	57764	<.0001
Trading_Revenue	1	-	-	-	-	615.020	<.0001
large_cap	0 1	(0.424)	0.071	(0.563)	-0.286	35.960	<.0001
large_cap	1 0	0.000	0.000	0.000	0.000	.	.
Sector_Cat	1 1	0.337	0.106	0.128	0.545	10.040	0.002
Sector_Cat	2 1	0.605	0.088	0.433	0.778	47.300	<.0001
Sector_Cat	3 1	0.882	0.085	0.716	1.048	108.440	<.0001
Sector_Cat	4 1	0.218	0.095	0.032	0.404	5.260	0.022
Sector_Cat	5 0	-	0.000	-	-	.	.
Scale	0	0.001	0.000	0.001	0.001		

The Gamma scale parameter was estimated by DOF/Pearson's Chi-Squared

Lagrange Multiplier Statistics

Parameter	Chi-Squared	Pr > ChiSq
Scale	23.8355	<.0001

LR Statistics For Type 3 Analysis

Source	Num DF	Den DF	F Value	Pr > F	Chi-Squared	Pr > ChiSq
Trading_Revenue	1	478	.	.	.	.
large_cap	1	478	35.72	<.0001	35.72	<.0001
Sector_Cat	4	478	44.88	<.0001	179.51	<.0001

Model 15: Sales1 model - Cash= Revenue+ large_cap+ sector+ year

Model Information

Model 15: sales1 model - Cash sales = Trading revenue + large_cap + sector + year

Data Set

WORK.SALES		
Distribution	Gamma	
Link Function	Log	
Dependent Variable	Cash_from_Sales	Trading_Rev
Scale Weight Variable	Market_Cap	Market Cap
Number of Observations Read	485	
Number of Observations Used	485	
Sum of Weights	2806683	

Class Level Information

Class	Levels	Values
large_cap	2	0 1
Sector_Cat	5	1 2 3 4 5
Year	7	1998 1999 2000 2001 2002 2003 2004

Criteria For Assessing Goodness Of Fit

Criterion	DF	Value	Value/DF
Deviance	472	822,074	1,742
Scaled Deviance	472	715.4703	1.5158
Pearson Chi-Squared	472	542,327	1,149
Scaled Pearson X2	472		1
Log Likelihood		(10,896.92)	

Analysis Of Parameter Estimates

Parameter	DF	Estimate	Standard Error	Wald 95% Confidence Limits		Chi-Squared	Pr > ChiSq
Intercept	1	21.302	0.100	21.106	21.497	45587	<.0001
Trading_Revenue	1	-	-	-	-	599.850	<.0001
large_cap	0 1	(0.420)	0.072	(0.560)	-0.280	34.540	<.0001
large_cap	1 0	0.000	0.000	0.000	0.000	.	.
Sector_Cat	1 1	0.334	0.108	0.124	0.545	9.680	0.002
Sector_Cat	2 1	0.605	0.089	0.431	0.778	46.620	<.0001
Sector_Cat	3 1	0.884	0.085	0.717	1.051	107.640	<.0001
Sector_Cat	4 1	0.210	0.097	0.019	0.401	4.660	0.031
Sector_Cat	5 0	-	0.000	-	-	.	.
Year	1998 1	(0.002)	0.077	(0.153)	0.150	0.000	0.984
Year	1999 1	(0.053)	0.077	(0.203)	0.097	0.480	0.488
Year	2000 1	(0.084)	0.075	(0.230)	0.063	1.260	0.262
Year	2001 1	-0.010	0.072	(0.151)	0.131	0.020	0.892
Year	2002 1	(0.097)	0.073	(0.241)	0.047	1.750	0.186
Year	2003 1	(0.075)	0.075	(0.222)	0.072	1.010	0.315
Year	2004 0	-	-	-	-	.	.
Scale	0	0.001	-	0.001	0.001	.	.

The Gamma scale parameter was estimated by DOF/Pearson's Chi-Squared

Lagrange Multiplier Statistics

Parameter	Chi-Squared	Pr > ChiSq
Scale	21.009	<.0001

LR Statistics For Type 3 Analysis

Source	Num DF	Den DF	F Value	Pr > F	Chi-Squared	Pr > ChiSq
Trading_Revenue	1	472	.	.	.	.
large_cap	1	472	34.34	<.0001	34.34	<.0001
Sector_Cat	4	472	44.43	<.0001	177.7	<.0001
Year	6	472	0.61	0.7251	3.64	0.7252

