Pre-merger Earnings Management: Sarbanes Oxley, Leverage and Non-cash Acquisition Premia

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Abstract

The objective of this thesis is to investigate earnings management within a structured sample design focusing upon a M&A context in the US by addressing three main empirical questions in three studies. The first study examines whether firms near M&A manage their earnings and whether this practice has changed after Sarbanes-Oxley Act (SOX). The second study investigates whether debt-financing has implications on event-specific earnings management. Finally, the third empirical study challenges the effectiveness of earnings management in a M&A context by proposing that acquirers' pre-merger earnings management can be uncovered and adjusted by the transacting targets. The key findings of the first study in this research suggest a strong tendency on the acquirer's side to manage their earnings upwards before completing non-cash deals, while weak evidence is reported on the target's side. More importantly, pre-merger earnings management does not seem to be significantly different between pre- and post-SOX eras, despite the assertions that the enactment of SOX was aimed at improving the reporting quality and the containment of earnings management practices. Given that SOX led to stronger due diligence and a more intense use of advisors for M&A deals, it could be argued that the setting of M&A activity creates a greater opportunity to manage earnings, given that managers' resourcefulness for planning and altering accounting numbers is exclusively much greater in the case of M&A after SOX. However, this finding could be a consequence of employing cross-sectional accruals' models, by which earnings management is detected relatively to the average level of normal accruals in peer firms at the time of estimation, whilst peer firms' in general have adopted conservative reporting policies since the enactment of SOX. The second study reports a strong inverse relation between the pre-merger income-increasing earnings management levels and the industry-adjusted leverage of the non-cash acquiring firms, which is consistent with Jensen's (1986) control hypothesis. This evidence highlights the importance of the industry-adjustment for leverage proxies in earnings management studies and proposes the use of structured sampling designs that controls for the firms' motivation to manage earnings. The second study's contribution leads to a better understanding of how a firm makes an accounting choice when it does favour one choice for its economic incentives but at the same time it is under creditors' monitoring pressures. The third empirical study provides robust evidence of a positive relation between acquirers' pre-merger earnings management and the non-cash acquisition premia. This evidence contributes to the existing literature by suggesting that even if the managerial team has succeeded in manipulating what is reported on paper, it may actually fail to influence the users' perceptions - especially the sophisticated ones. The evidence challenges the naive investors' hypothesis of Sloan (1996), which has been repetitively assumed by several studies in contexts where equity shares are issued.

Pre-merger Earnings Management: Sarbanes Oxley, Leverage and Non-cash Acquisition Premia

by

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A thesis submitted for the degree of Doctor of Philosophy

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إلى مَنْ بَذَلَ الكَثِيرَ مِنْ أجْلِي وَغَرَسَ حُبَّ العِلْمِ في نَفْسِي، إلى والِدَيَّ الكِرَامْ هَذِهِ الأُطْرُوحَة أُهدِيْ

I dedicate this work to my great parents for the passion of learning they bestowed upon me.

كُلَّما أدَّبَنِي الدَّهرُ .. أرَانِي نَقَصَ عَقْلِي
وكُلَّما إزدَدْتُ عِلْمَاً .. زَادَنِي عِلْمَاً بِجَهْلِي
الإمَامُ الشَّافِعِيّ-

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List of Acronyms

EMH	:	The Efficient Market Hypothesis
FASB	:	The Financial Accounting Standards Board
GAAP	:	The Generally Accepted Accounting Principles
IASB	:	The International Accounting Standards Board
IPO	:	Initial Public Offering(s)
LD and HD	:	Low-Leverage and High-Leverage
M&A	:	Merger(s) and Acquisition(s)
MBO	:	Management's buy-out(s)
MM	:	The Market Model
M&M	:	Modigliani and Miller
PAT	:	Positive Accounting Theory
SEC	:	The Securities and Exchange Commission
SEO	:	Seasoned Equity Offering(s)
SFAC	:	Statement of Financial Accounting Concept(s)
SOX	:	The Sarbanes-Oxley Act of 2002

Declaration

I declare that this thesis is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person, except where due acknowledgement has been made in the text. I confirm that no part of the material presented in this thesis has previously been submitted by me or any other person for a degree in this or any other institution.

Statement of Copyright

Malek Alsharairi, February 2012. Durham, England.

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Chapter 1. Introduction

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Introduction

1.1. Background and Research Questions

Earnings management has been an issue of a rising importance in the field of accounting not only for academics, but also for practitioners and regulators alike. The phenomenon of earnings management has captured the interest of the aforementioned parties since the advances of the neoclassical theory of financial economics culminated in the launch of empirical research focusing specifically upon accounting in the mid-twentieth century. The notably key works from Beaver (1968) and Ball and Brown (1968), who proposed a relationship between the reported accounting earnings and value, marked the evolution of a new era in accounting research.

The mounting gravity of the earnings management issue naturally stems from the elementary roles that accounting earnings can play for a wide spectrum of users. This led a number of accounting empiricists [1] to call for a positive accounting theory that can "explain why accounting is what it is, why accountants do what they do, and what effects these phenomena have on people and resource utilization (Jensen 1976, p.13)."

Up until the late 1990s, earnings management research had focused on detecting the abnormality in firms' accruals and determining the potential managerial motivations to

[1] The school of positivism in accounting is known in the literature as "*The Rochester School of Accounting*" because the pro-positivism in accounting research were mainly from the University of Rochester, namely, Jensen, Watts and Zimmerman. This term was first coined by Jensen (1976) and used afterwards by many such as Tinker et al. (1982), Christenson (1983) and Laughlin (1995).

manage the firms' accruals before having a need to focus more at the constraints of earnings management and its ramifications on resource allocation decisions (Healy and Wahlen 1999). Interestingly, two research streams have evolved in earnings management and can be identified by their sampling design (i.e. structured versus unstructured).

A general stream of literature has been investigating earnings management in *unstructured* datasets of firms (i.e. random samples or even taking the whole market) in order to find links between earnings management and the different presumably related proxies. This wide stream of literature has also enormously fed the research of *income smoothing*[2] and *earnings quality*.[3]

However, a more specific stream of earnings management research has adopted a *structured* design by considering firms involved in specific corporate events[4] around which managers have the incentive to make purposeful decisions over altering the reported earnings. Instances of these events include raising capital by issuing shares in either initial public offerings (hereafter IPOs) or seasoned equity offerings (hereafter SEOs), management buyouts

[2] Income smoothing is defined and explained later in Chapter 2 section 2.3.1.

[3] Earning quality is defined by Dechow et al (2010, p.344) as follows: "Higher quality earnings provide more information about the features of a firm's financial performance that are relevant to a specific decision made by a specific decision-maker." The absolute value of abnormal accruals has commonly used as a proxy for earnings quality. "The general interpretation is that if the ''normal'' component of accruals is modeled properly, then the abnormal component represents a distortion that is of lower quality (Dechow et al. 2010, p.357)."

[4] This design of earnings management research is somehow analogous to *event-studies* in economics and finance research. However, event studies focus on the anomalies in value by "measuring the effects of an economic event [or news] on the value of firms (MacKinlay 1997, p.13)." See MacKinlay, A. C. (1997). "Event Studies in Economics and Finance." Journal of Economic Literature **35**(1): 13-39. and McWilliams, A. and D. Siegel (1997). "Event Studies in Management Research: Theoretical and Empirical Issues." Academy of Management Journal **40**(3): 626-657.

(hereafter MBOs), mergers and acquisitions (hereafter M&A) and meeting or beating benchmarks.

Unlike the first stream of literature that employs unstructured datasets, event-specific earnings management research (i.e. with a structured sample design) can effectively control for the firms' motivation to manage earnings and is likely to reduce the unintentional[5] increase in firms' accruals as well as the noise from other extraneous events. Thus, the diagnosis and explanation of earnings management, its related drivers, constraints and implications should be more persuasive and accurate in such a research design.

By adopting a structured sampling design, this thesis introduces three empirical studies that investigate event-specific earnings management. The unique context of M&A is used in order to investigate earnings management by their engaging firms prior to the deal's announcement so as to address three related empirical questions. The first research question addressed in this thesis is whether firms' pre-merger earnings management after the enactment of Sarbanes-Oxley Act 2002 (hereafter SOX) has been significantly different from its level in the pre-SOX era. More specifically, the different patterns and timing of pre-merger earnings management as well as the differences in earnings management practices between pre and post-SOX eras are investigated in public firms engaged in mergers and acquisitions (i.e. acquiring and target firms).

[5] Earnings management is identified by the *intentional* endeavours of management to alter the firm's accruals, as asserted by Phillips et al. (2003) and explained more in detail in section 2.3.1.

The second empirical question addressed in the thesis is whether the monitoring role of creditors can inhibit management's ability to manage earnings preceding events characterised by evident incentives for earnings management. More specifically, the hypothesised controlling effect of abnormally high leverage on pre-merger income-increasing earnings management is investigated in non-cash acquiring firms. The third research question is whether the acquirer's pre-merger earnings management can be detected and revised in the deal's valuation by the target firm. In other words, the relationship between acquirer's pre-merger earnings management and the non-cash acquisition premium is examined in M&A deals where equity is used in the payment structure.

1.2. Research Motivation

The investigation in this thesis is conducted on the largest market in the world in terms of M&A activity – the US market. In 2008 for example, around 24% of the global M&A deals undertaken were initiated by a US based acquiring firm.[6] More interestingly, the US corporate environment has experienced one of the most drastic regulatory and governance reform in the past decade by enacting SOX. Subsequently, the debate regarding its implications on corporate reporting, agency problem and governance consequences has been on-going since then (Ashbaugh-Skaife et al. 2008; Madura and Ngo 2010). The debate has recently become extended to include numerous research areas such as earnings management (Cohen et al. 2008), market efficiency and major business transactions such as M&A (Chelikani and D'Souza 2011).

[6] Source: *Thomson ONE Banker*

Despite the mounting accounting research related to this revolutionary piece of legislation, there are two related concerns which motivated the first empirical study described in Chapter 3 of this thesis. First, the extant literature compares earnings management levels around SOX in a typical way for the whole market or random samples by adopting what we called above the *general stream* approach (Cohen et al. 2008; Zhou 2008; Wilson 2009). This approach is useful to understand whether the reporting mode of the market in general shifted toward *conservative accounting* (i.e. reporting lower levels of abnormal accruals) in post-SOX era, for example. However, the outcome of these studies does not explain the reaction of those firms that have incentives to manage earnings. Second, it is asserted by a recent review study that the majority of studies have been done before the full effect of SOX upon the reporting environment has reached its equilibrium state and, thus, current investigations should produce better results (DeFond 2010).

Another motivation for the research in this thesis is the controversy over the impact of leverage on earnings management, which has stimulated the second empirical study described in Chapter 4 of this thesis. Interestingly, the relevant literature is split into two opposing viewpoints over this empirical issue. On the one hand, there is a viewpoint that advocates a positive relation by arguing that looking at debt-contracts from an agency perspective should pose incentives to firms to manage earnings so as to align with accounting-based debt covenants. On the other hand, the opposing viewpoint advocates a negative relation by arguing that debt-contracts bring an additional monitoring group (i.e. creditors) to the firm, which should improve control and governance over the managerial opportunism and can more effectively deter practices such as earnings management. Motivated by this empirical debate,

this thesis asserts that employing the event-specific design for investigating the leverage impact on earnings management can provide a profound understanding to the proclaimed relationship – given that the structured sampling design includes firms that initially possess consistent intent and incentive to manage earnings.

The third empirical study, described in Chapter 5 of this thesis, is motivated by the assumed validity of the naïve investor premise of Sloan (1996) in the pre-merger earnings management research. Interestingly, the literature of pre-merger earnings management arguably implies that reducing the cost of equity raised in a M&A is guaranteed by the success of adopting income-increasing earnings management before the deal. Evidently, this assumption collapses if the naïve investor premise is proven to be untrue.

In fact, reporting positive evidence of pre-merger earnings management *per se* indicates nothing but the success of altering the reported numbers on paper. Hence, this does not necessarily indicate that the users' perceptions – especially those of well-informed ones like the participants in M&A – are also successfully manipulated. Motivated by this view, the third empirical model investigates how pre-merger earnings management undertaken by a firm is perceived and processed by relevant parties by examining the non-cash acquisition premium.

1.3. Potential Contribution

This thesis contributes to the existing literature in a number of ways. The first empirical study in this thesis (Chapter 3) tests earnings management occurrences for each of the last four quarters prior to deal announcement not only for the acquiring firms, but also for their targets concurrently by using a sample that includes M&A deals before and after SOX was enacted. It

also adds to the growing body of the literature examining the effectiveness of SOX in improving the credibility of financial reporting by investigating a structured sample of firms that have the incentive to practice earnings management – merging firms. Moreover, this research uses quarterly reports, which are superior to annual ones in terms of their timeliness for detecting pre-merger alteration of earnings. Therefore, this research provides a track of the managerial discretion over accruals in the previous four successive quarters prior to a deal's announcement. This would precisely locate the timing of manipulating earnings.

The second empirical study (Chapter 4) aims at contributing to the existing literature on the impact of leverage on earnings management by employing a structured sample of non-cash acquiring firms which initially have the motivation to manage their earnings upwards. Such design can provide more reliable results when comparing the magnitude of earnings management among firms with different level of leverage, since the motivation to manage earnings is held consistent for all firms in the testing sample, rather than being random or unintentional as has been the case in prior studies. Moreover, this research distinguishes itself from previous studies by constructing a leverage proxy more consistent with the industry-adjusted models of measuring earnings management (see, for example, the adjusted proxy by Martin 1996). Since abnormal accruals, which provide a proxy for earnings management are normally calculated based upon the universe derived industry-adjusted portfolios, the leverage proxy employed within this study is similarly based on the universe derived industry-matched portfolios.

The investigation of the third empirical study (Chapter 5) contributes to the literature by proposing a relationship between pre-merger earnings management and non-cash acquisition

premium in M&A. Proposing such a relationship challenges the naïve investor hypothesis of investors in a M&A context and develops a counter argument that a target's management is a well-informed user that is more likely to detect pre-merger earnings management and reverse its impact. The third empirical study can significantly add to the existing literature by providing a better understanding of the consequences of manipulating earnings, in cases where the user is sophisticated and well informed such as target firms. Finally, by assessing the same set of acquisition premium factors for cash and non-cash samples, simultaneously, this research provides a significant contribution to whether earnings management is relevant to the valuation process and acquisition premia in non-cash M&A deals.

1.4. Thesis Structure

This thesis includes three empirical studies on pre-merger earnings management and it is structured in six chapters. Following this introductory chapter, Chapter 2 provides a general overview of the role of accounting earnings. It also reviews some key papers that have had a seminal impact on the literature related to earnings management as well as the empirical research in financial accounting in general. In addition, the concept of earnings management is taken into detailed discussion and the most widely used accrual models for capturing earnings management are discussed. Chapter 3 presents the first empirical study, which examines pre-merger earnings management for acquiring and target firms in pre- and post-SOX periods. Chapter 4 presents the second empirical study by examining the impact of leverage on pre-merger earnings management. Chapter 5 includes the third empirical study that proposes a relationship between the acquirer's pre-merger earnings management and the non-cash

acquisition premium. Finally, Chapter 6 presents the concluding remarks of this thesis, locates some potential research limitations and suggests avenues for future research.

Chapter 2. Accounting Earnings and Earnings Management: An Overview

Chapter 2

Accounting Earnings and Earnings Management: An Overview

2.1. Introduction

Before discussing the concept of earnings management and its implications, it is necessary to understand the importance and the role of accounting earnings to the stakeholders. The term "earnings" or "accounting earnings" in the context of this research indicates the net income or the profits reported on a periodic basis by a firm according to a specific set of flexible accounting standards. It does not represent a well-defined economic construct, given the absence of an ideal theory that can precisely prescribe what accounting policies should be used by a firm (Scott 2003).

Without appreciating the importance of accounting earnings, then the manipulation of the reported earnings could arguably not represent a research-worthy problem, indeed. The main purpose of this chapter is to provide a general overview of the role of accounting earnings as well as reviewing the existing literature related to earnings management as a key concept in the area of financial accounting research.

This chapter continues as follows. Section 2.2 of this chapter discusses the role of accounting earnings and the associated importance from the perspective of stakeholders. It also sheds light on the value-relevance of accounting information and the role of the Efficient Market Hypothesis in the advancement of empirical research in the field of financial accounting, leading to the development of the Positive Accounting Theory. Section 2.3 introduces an

illustration to the concept of earnings management by looking at different definitions in the literature. It also provides a brief discussion of the firms' motivations for practicing earnings. Section 2.4 introduces the most commonly used accruals models to capture earnings management practice before this chapter concludes in section 2.5.

2.2. Understanding the Roles of Accounting Earnings

Fields et al. (2001) start their paper by addressing the question of whether accounting actually matters. They argue that there would be no substantive role for financial reporting in a perfect and complete world. However, the demand for accounting implies that accounting reporting and disclosures are efficient indicators of market imperfections.

Accounting provides an important source for information such as earnings to a variety of interested users. Accounting earnings' role for stakeholders is twofold: stewardship and informativeness (Lambert 2001; Baldenius et al. 2002; Bushman et al. 2006; Feltham et al. 2006; Ronen and Yaari 2008; Drymiotes and Hemmer 2009). The stewardship role of accounting results from the separation between managers and owners in the corporate form of organisations, which makes the manager in a position of a steward to owners. The informativeness role of accounting information stems from the demand by users such as investors and creditors for information that enables them to predict future cash flows and assesses their risk.

2.2.1. Stewardship Perspective and the Agency Relationship

The Statement of Financial Accounting Concepts (hereafter SFAC) No.1, which is issued by the Financial Accounting Standards Board in the US (hereafter FASB), stresses that financial reporting is meant to provide information about how a firm's management discharges the stewardship responsibility to shareholders (FASB 1978).

Stewardship, as an objective of financial reporting, can be defined as a process of reporting "on the control and use of resources by those accountable for their control and use to those to whom they are accountable (Gjesdal 1981, p.209)." It is noted that the terms stewardship and accountability have been often used interchangeably within the literature and accounting legislators[7] to describe the relationship between owners and their stewards or entrepreneurs.

Jensen and Meckling (1976, p.305) cite Adam Smith (1776) commenting on the role of stewards' and the relationship between owners and managers as follows:

> "…being the managers of other people's money than of their own, it cannot well be expected, that [managers] should watch over it with the same anxious vigilance with which the partners in a private [partnership would] frequently watch over their own. Like the stewards of a rich man, they are apt to consider attention to small matters as not for their master's honour, and very easily give themselves a dispensation from having it. Negligence and profusion, therefore, must always prevail, more or less, in the management of the affairs of such a company".

[7] For example, there is a joint project between the International Accounting Standards Board and the US Financial Accounting Standards Board on harmonising their Conceptual Framework. The board material shows that stewardship and accountability are being used interchangeably by FASB (FASB 2010).

The manager-shareholder relationship is known in the literature of economics, finance and accounting as the agency relationship. Jensen and Meckling (1976) and Fama (1980) view the firm as a set of contracts among the interacting factors of production. According to this view, the agency theory developed by describing the relationship one in which there is "a contract under which one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf which involves delegating some decision making authority to the agent (Jensen and Meckling 1976, p.308)."

To organise this contractual relationship, there should be a monitoring and performance evaluation basis over the manager's performance. Watts and Zimmerman (1978, p.113) state that one of the most important among the functions "of financial reporting is to constrain management to act in the shareholders' interest." The stewardship role of accounting provides a partial explanation to the importance of earnings.

Indeed, the importance of earnings stems from the fact that there is a demand for reliable information that is useful for contracting and performance evaluation purposes (Watts and Zimmerman 1986). Supported by the premise of agency theory, Bushman *et al.* (2000) developed a model that explains the direct economic connections between the way earnings are used in the determination of managers pay.

Given that managers may act to serve their own interests, matching the objective between owners and managers is not an easy task. Naturally, owners demand information about managers actions to monitor them while also seeking to offer incentives such as to direct their future actions to the owners' interest (Ronen and Yaari 2008). The agency perspective, with its

inherent potential conflict, gave birth to vast streams of research regarding corporate control and optimal managerial incentive plans (i.e. management compensation hypothesis), which provides evidence that increasing stock-based compensation in managements' incentives package has decreased the weight of earnings in their compensation (Bushman and Smith 2001; Bushman et al. 2006).

Under the joint conceptual framework project by the FASB and the International Accounting Standards Board (hereafter IASB), there was a debate on whether or not the stewardship objective should be emphasised and explicitly included in the conceptual framework of financial reporting since this objective is already implied assuming that this objective is a subset of the decision-usefulness objective. However, the boards later decided that financial reports should be prepared from the entity's perspective and should aim to provide information to a wide range of users, rather than focusing only on the information needs of existing common shareholders (FASB 2005).

2.2.2. Informativeness Perspective and the Economic Consequences

The conceptual framework that is developed by the FASB emphasises the importance of the informativeness role of earnings and their value relevance. SFAC No.1 suggests that the firm's reported earnings may be used by different users to assess the firm's prospects for cash flows by using them as a cornerstone for predicting future earnings and assessing risk. Therefore, accounting earnings are useful for estimating the firm's "earning power" and evaluating its management's performance (FASB 1978).

Moreover, it suggests that reporting earnings according to the accrual basis is much more informative to users than any other existing method to evaluate performance, predict future cash flows and estimate risks. The SFAC No.1 on the objectives of financial reporting in business enterprises states the following in paragraph 43-44:

> "The primary focus of financial reporting is information about an enterprise's performance provided by measures of earnings and its components. Investors, creditors, and others who are concerned with assessing the prospects for enterprise net cash inflows are especially interested in that information. Their interest in an enterprise's future cash flows and its ability to generate favorable cash flows leads primarily to an interest in information about its earnings rather than information directly about its cash flows... Information about enterprise earnings and its components measured by accrual accounting generally provides a better indication of enterprise performance than information about current cash receipts and payments (FASB 1978, p.19)."

The question over the informativeness role of reported earnings is of crucial interest to accounting professionals, standard setting bodies as well as to interested users, despite the fact that the answer remains empirical. Nevertheless, it is broadly accepted that firms' earnings play a key informational role in influencing their share prices (Chambers and Penman 1984; Abarbanell and Bernard 1992; Subramanyam and Wild 1996; Bushman et al. 2000; Vafeas 2000; Yeo et al. 2002; Cohen et al. 2008).

The influence of accounting information on the firm's value and on the behaviour of decision-makers is persuasively defined by Zeff (1978) as "economic consequences." The concept of

economic consequence declares that accounting procedure choice affects the value of the firm, regardless of the implications of efficient market hypothesis[8] (Scott 2003, p.259).

2.2.2.1. Early Empirical Evidence

Ball and Brown (1968) and Beaver (1968) launched the empirical evaluation of the usefulness of earnings information to users. Informativeness or information content was defined by Beaver (1968, p.69) as a sufficient change in expectations that can "induce a change in the decision-maker's behaviour."

Beaver's argument according to the aforementioned definition posits that accounting earnings of a given firm have informational value only if they influence the optimal holding of that firm's share in a portfolio of a rational investor. This view stands on the underlying assumptions of the expectations models at that time, such as Fama (1965), which do not consider accounting earnings among the determinants of prices in the capital markets. Therefore, Beaver had to distinguish between price and volume tests since price reflects changes in the expectations of the market as a whole while volume reflects changes in the expectations of individual investors. However, Ball and Brown (1968, p.160) argued that a firm's earnings may exert a direct impact on the firm's share price in the market so long as capital markets are efficient. They commented on the implications of capital theory:

> "Recent developments in capital theory provide justification for selecting the behavior of security prices as an operational test of usefulness. An impressive body of theory supports the proposition that capital markets are

[8] The Efficient Market Hypothesis is explained later in section 2.2.2.2.

> both efficient and unbiased in that if information is useful in forming capital asset prices, then the market will adjust asset prices to that information…"

Interestingly, their empirical investigation and remarks on the efficiency of capital markets opened a wider debate on whether markets are efficient and led to the evolution of the "*Efficient Market Hypothesis*".

2.2.2.2. The Relevance of the Efficient Market Hypothesis

An efficient market is a "market in which prices always fully reflect available information" (Fama 1970, p.383). This definition is found very general and the term "available information" does not provide testable implications unless it is conditional on a relevant information set.

Jensen (1978) suggests that the essence of the Efficient Market Hypothesis (hereafter EMH) is just an extension of the economic zero profit equilibrium condition to the prices' behaviour in competitive markets under uncertainty. Based on this view, Jensen (1978, p.96) introduced a simpler definition stating that "[a] market is efficient with respect to information set Θ_t if it is impossible to make economic profits by trading on the basis of information set Θ_t."

In an attempt to create a testable design for the EMH, Fama (1970; 1991) proposed three tests representing three relevant information subsets namely; weak form tests, semi-strong form tests and strong form tests. The information subset for testing the weak form includes historical prices data; the information subset for testing the semi-strong form includes all publicly available information; while the information subset for testing the strong form of the EMH includes monopolistic or insider access to information sources.

Among the three aforementioned forms of EMH tests, the semi-strong form tests seem the most relevant to the positive accounting research, by which the association between firm's earnings and its share value is examined. Fama (1991) adopted the term "event studies" for semi-strong form tests claiming that event studies provide the cleanest evidence on market efficiency, especially those investigating earnings-announcement anomalies.

Despite the failure of some studies to document earnings-predictability to future share prices (see for example Bernard and Thomas 1989; 1990), it has been argued that "there is no other proposition in economics which has more solid empirical evidence supporting it than the Efficient Market Hypothesis" and that testing of the hypothesis, "with very few exceptions, found consistent evidence with the data in a wide variety of markets (Jensen 1978, p.95)".

2.2.3. The Relevance of the Positive Accounting Theory

Accounting practice is governed by a given set of accounting standards, by which the corporate earnings should be determined and reported on an accrual basis. However, accounting standards provide discretionary power to managers - for some accounting transactions - to choose among different acceptable accounting methods and, eventually, the reported earnings can be affected by this managerial discretion. In fact, there is no extant theory that can precisely prescribe the ideal accounting choice that managers should adopt. Nevertheless, there have been attempts in the literature to develop a theory that can contribute to the understanding of the accounting choice, such as the Positive Accounting Theory, which is considerably relevant to the specific context of this thesis as well as to the broader area of financial accounting research.

The *Positive Accounting Theory* aims at predicting "the choices of accounting policies by firm managers and how managers will respond to proposed new accounting standards (Scott 2003, p.273)". Indeed, the evolution of the school of positivism has had imperative implications for financial reporting policy, in general, and on reporting earnings, in particular given its attempts to provide reasonable predictions of the events of the real world.

Back to the 1930s, the securities acts in the US were enacted for regulating disclosure and reporting by those firms with securities listed on the stock exchanges, and for creating the US Securities and Exchange Commission (hereafter SEC) "to enforce the newly-passed securities laws, to promote stability in the markets and, most importantly, to protect investors (SEC 2011, p.3)." After having the securities exchanges regulated, the theorists' main concern moved towards developing accounting theory. The primary purpose of accounting theory, according to Demski (1973, p.718), is to *explain* which accounting policy should be used, whereas Watts and Zimmerman (1986, p.2) argue that the objective of accounting theory is to *explain* as well as to *predict* accounting practice. The explanation role includes offering reasons for an observed practice and the prediction role includes forecasting unobserved accounting phenomena.

Until the 1960s, the normative approach had been dominant concerning the accounting policy recommendations, research and textbooks[9]. A normative, prescriptive or regulative science,

[9] For example, Watts and Zimmerman (1986) noted that text books in the 1960s advocated accounting methods on prescriptive (i.e. normative) basis without providing a scientific method for testing their validity. Among the examples they provide about this issue are Edwards, E. O. and P. W. Bell (1961). The Theory and Measurement of Business Income. Berkeley, Univeristy of California Press., Chambers, R. J. (1964). "Measurement and Objectivity in Accounting." Accounting Review **39**(2): 264., and Chambers, R. J. (1966). Evaluation and Economic Behaviour. E. Cloiffs. New Jersey,

from the perspective of Friedman (1953, p.3), is a body of "systematized knowledge discussing criteria of what ought to be".

The propositions, under which the prescriptive (i.e. normative) arguments rest, are constructed in an irrefutable manner. For example, the normativists may advocate a particular prescription that firms should follow to report their assets, such as current cost method, assuming that this accounting *alternative* serves a certain *objective*, such as economic efficiency, without providing a basis to assess their hypothesised relationship between the proposed policy and its respective objective (Watts and Zimmerman 1986).

Accordingly, the normative theory of accounting policy has been strongly criticised that it does not provide empirical validation of the hypotheses on which the theory's prescriptions rest, assuming that these prescriptions were "self-evident" (Demski 1973; Jensen 1978; Watts and Zimmerman 1978; Watts and Zimmerman 1990).

Unlike the normative school, the positivist approach of theorisation does not prescribe "*what ought to be*" in terms of accounting policy, but it attempts to explain the "*what is*" (Scott 2003). In advocating positivism in accounting, Watts and Zimmerman (1986) argue that the objective of the accounting policy is not the theorist's choice but the user's.

This debate has been on the rise since the 1960s, when Ball and Brown (1968) and Beaver (1968) and others initiated the empirical research in accounting, benefiting from previous

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Princtice-Hall Inc. advocated current cash equivalent and current costs as valuation methods for assets.

economic and financial methods (for example see Demski 1973; Chambers 1976; Demski 1976; Tinker et al. 1982; Vickrey 1982; Christenson 1983; Watts and Zimmerman 1990).

The early encouraging results from testing the relation between accounting earnings and share prices (or changes in share prices), alongside the ambition to report evidence of capital market efficiency in finance and economics, have left a great impact on accounting literature (also see Ball 1978; Watts 1978).

In fact, the development and testing of the EMH in the 1970s, which is explained in the previous section, provided more support to the challengers[10] of the normative school. For example, Watts and Zimmerman (1986) noted that the development of the EMH has "spawned" an enormous empirical examination over the association between accounting earnings (and changes in reporting procedures) and share prices.

Holthausen and Watts (2001), in their literature review paper "*The Relevance of the Value-Relevance*", noted that this debate, which started in the 1960s, has led accounting researchers to draw implications for standard-setting. Watts and Zimmerman (1978) focused on these implications to draw a positive theory of the determination of accounting standards to understand the influences of the accounting standard-setting process. They adopted the view that management is central to any discussion of financial reporting and they aimed to understand the incentives of management to oppose or advocate different standards.

[10] The literature sometimes refers to those who challenged the normative approach in accounting theorisation as "*The Rochester School of Accounting*", specifically Jensen, Watts and Zimmerman. This term was coined by Jensen (1976) and used afterwards by many such as Tinker et al. (1982) and Christenson (1983).

Many proposed these changes in financial accounting standards since they blamed the generally accepted accounting principles (GAAP) for the low correlation between earnings and future market prices of shares (Lev 1989) and, therefore, the informativeness of earnings came to be questioned. Ronen and Yari (2008) argue that the informativeness role of earnings is questioned by the fact that investors may prefer the *analysts' earnings forecasts* over GAAP earnings when they predict the future risks and expected cash flows. Bradshaw and Sloan (2004) note that the increasing focus on alternative definitions of earnings, such as "Street" earnings numbers[11], is driven primarily by the reporting strategies of firms' managers.

2.3. Earnings Management

The previous section highlighted the various roles of accounting earnings, their importance from the perspective of users as well as the theoretical grounds of their relevance to the firm's value. It showed that providing managers with discretionary power to choose among different methods to report earnings would naturally make the managers' choices questionable to researchers, practitioners and standard setters, given that different methods produce different periodic earnings.

The concept of economic consequences by Zeff (1978) implies that accounting earnings "can *affect* the actual decisions that are made by investors as well as managers, rather than simply *reflecting* the results of these decisions (Scott 2003, p.261)." Therefore, the research

[11] These are the numbers announced by firms in their press releases and followed up by analyst estimate clearinghouse services, such as *I/B/E/S, Zacks*, and *First Call* (Bradshaw and Sloan 2002)

conducted under the Positive Accounting Theory attempts to explain and predict the decisions of management regarding the accounting choices made.

2.3.1. Definitions

As noted previously, the reported accounting earnings are accounted for according to the accrual basis, which means that they consist of two components - cash and accruals. Therefore, the level of managerial discretion considerably affects reported earnings over accounting choices, accruals or operating cash flows. Such identified managerial discretion, which aims at *intentionally* altering the reported earnings in order to influence the associated economic consequences, is described as "earnings management" (Phillips et al. 2003, p.493).

Corporate managers may prefer to manage earnings by exerting discretion over the accrual component of earnings as this manipulation is less noticeable than to change the firm's accounting policies and is also less costly than altering the cash component (Phillips et al. 2003). Therefore, the literature has increasingly focused on accruals to investigate earnings management (see, for example, Healy 1985; DeAngelo 1986; Jones 1991; Dechow et al. 1995; Jeter and Shivakumar 1999; Kothari et al. 2005; Tendeloo and Vanstraelen 2005; Gong et al. 2008; Liu et al. 2010).

In fact, there is no consensus held by researchers over a single and exact definition of earnings management (Beneish 2001). Ronen and Yaari (2008) provide a detailed discussion of the different definitions of earnings management provided in the literature. Based on the view that a firm is a set of contracts (Fama 1980), Ronen and Yaari (2008, p.14) offer the following loose definition, stating that "earnings management is the choice of accounting treatment that

is either opportunistic or economically efficient." Although this definition is broad and captures the contractual outcome of earnings management, it does not seem to contain the informational implication of managing earnings.

An alternative definition that has been widely followed in this research area is provided by Healy and Wahlen's (1999). In their review paper, they provide a definition that covers both the contractual and some informational implications of earnings management as follows:

> "Definition: Earnings management occurs when managers use judgment in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers (Healy and Wahlen 1999, p.368)"

Likewise, Healy and Wahlen's (1999) definition focuses on the economic consequences perspective and is criticised for inadequately accentuating the informational perspective of the accounting policy (Beneish 2001). Beneish (2001) backs this critique by Holthausen and Leftwich's (1983) assertion that both economic consequence theories and information theories can explain the association between the firm's accounting policy and its cash flows. Nonetheless, such a definition assumes that managerial discretion is intended only to "mislead" stakeholders.

Furthermore, Beneish (2001) argues that the definition fails to draw an obvious line between lawful earnings management and fraud[12]. Becker et al. (1998) and Dechow and Skinner (2000) stress that earnings manipulation by violating GAAP is further than that of the scope of

[12] Beneish (2001) cites the definition of fraud as "one or more intentional acts designed to deceive other persons and cause them financial loss", by the National Association of Certified Fraud Examiners (1993, p.6).

earnings management. In line with this view, managers are given a limited latitude to exercise their discretion, which remains within the boundaries of GAAP (Chung et al. 2002). Riahi-Belkaoui (1999, p.49) stresses this point in the definition he offers: *"*[e]arnings management is the process of (the) deliberate use of generally accepted accounting principles to reach a desired level of reported earnings."[13]

By reconciling these views, this study considers earnings management as the managerial practices, in accordance with GAAP, that are aimed at influencing the accrual component of the reported earnings upwards (i.e. reporting positive abnormal accruals) or downwards (i.e. reporting negative abnormal accruals) motivated by the associated informational implications and the economic consequences.

Therefore, it is important to distinguish between the two directions of the managerial discretion over accruals. Depending on the management's incentive or objective, the firm may engage in either income-increasing earnings management (see, for example, Sweeney 1994; Teoh et al. 1998; Erickson and Wang 1999; DuCharme et al. 2001; Mantecon 2008) or income-decreasing earnings management (see, for example, Healy 1985; Jones 1991; Holthausen et al. 1995; Fischer and Louis 2008).

Income-increasing earnings management can be achieved by adopting "*aggressive accounting*" techniques through, for example, underestimating the provision for bad debts and drawing down reserves, while income-decreasing earnings management can be attained by adopting

[13] Violating GAAP in order to influence the reported earnings is considered a fraudulent accounting practice and should not be classified under earnings management (Beneish 2001).

"*conservative accounting*" through, for example, overly recognising provisions or reserves or overstating restructuring charges and assets' write-offs (Dechow and Skinner 2000).

There is another term directly linked to earnings management called "*income smoothing*". Trueman and Titman (1988) and Fudenberg and Tirole (1995) argue that a firm's management often manipulate the reported periodic earnings to dampen the fluctuations and make the earnings' stream over time less variable (i.e. smoother). Income smoothing can be operationally defined as "the repetitive selection of accounting measurement or reporting rules in a particular pattern, the effect of which is to report a stream of income with a smaller variation from trend than would otherwise have been seen (Copeland 1968, p.102)"

The literature provides two main explanations over the income-smoothing hypothesis. First, it is argued that firms with a smoother stream of periodic earnings have a greater value as they are viewed by investors and creditors as being less risky prospects (see, for example, Hepworth 1953; Lambert 1984; Moses 1987; Wang and Williams 1994; Grant et al. 2009). Second, adopting an income smoothing strategy improves the informativeness of the publicly reported earnings (i.e. smoother earnings reflect greater value-relevant information) in predicting the firms' future earnings and cash flows (see, for example, Barnea et al. 1976; Tucker and Zarowin 2006; Cahan et al. 2008; Martinez and Castro 2011).

It is noted that the terms "income smoothing" and "earnings management" are used interchangeably in some research (see, for example, Gaver et al. 1995; Guidry et al. 1999; Tucker 2005). Nonetheless, as Dechow and Skinner (2000) intuitively suggested, income smoothing can be viewed as just a special form of earnings management such that the research

on income smoothing can be considered as a sub-area of research under the wider umbrella of earnings management.

2.3.2. Motivations

Indeed, appreciating the importance and the roles of accounting earnings, as discussed earlier in this chapter (see section 2.2), is an indispensable foundation needed to clearly understand the firms' rationale for managing their reported earnings. The assumptions underlie the Positive Accounting Theory can be a start for explaining the firms' motivation to undertake earnings management. Viewing the firm as a *nexus of contracts* with managers, employees, regulators, suppliers and capital providers (i.e. lenders and investors), suggests that the firms operations are efficiently conducted if the firm has minimised the associated contracting costs (Jensen and Meckling 1976). However, the Positive Accounting Theory also assumes that managers are rational individuals - just like investors. Thus, the firm's choice to manage earnings is not necessarily explained by efficiency but could also be driven by managerial opportunism (Scott 2003).

The literature investigates different motivations for executing earnings management. Following Healy and Wahlen (1999), Dechow and Skinner (2000) and Beneish (2001), earnings management motivations can be presented under three main classes as follows:

2.3.2.1. Security market motivations

The informativeness role of accounting earnings and the value-relevance of the periodic income from the perspective of investors can justify the managerial incentive to alter the firm's reported earnings in order to affect the firm's market valuation (Chambers and Penman

1984; Trueman and Titman 1988; Houmes and Skantz 2010). For example, managers may use earnings management to align the firm's earnings with the market expectations by meeting or beating *ex ante* earnings' forecasts (Waymire 1984; Payne and Robb 2000; Burgstahler and Eames 2006; Bartov and Cohen 2009). It is argued that managers may use earnings management to avoid reporting lower periodic earnings than what the market expects (i.e. analysts forecasts) (Burgstahler and Eames 2006)[14].

Moreover, there are several events where it is argued that managers may attempt to affect the firm's share prices (either positively or negatively) by exercising a planned earnings management strategy. Management buyouts represent an example of a severe agency problem where incentives to the firm's managers to adopt income-decreasing reporting strategies arise to reduce the share's purchase price (DeAngelo 1986; Perry and Williams 1994; Fischer and Louis 2008).

In addition, a number of studies investigate income-increasing earnings management preceding events that involve offering equity shares such as in initial equity offerings (Aharony et al. 1993; DuCharme et al. 2001), seasoned equity offerings (Rangan 1995; Rangan 1998; Teoh et al. 1998; Shivakumar 2000; Kim and Park 2005) and non-cash M&A (Erickson and Wang 1999; Louis 2004; Gong et al. 2008).

[14] Ronen and Yari (2008) noted that investors may prefer the analysts' earnings forecasts over GAAP earnings when they predict the future risks and expected cash flows. The increasing value-relevance of the earnings forecasts should add more pressure on managers to follow and meet the analysts' expectations and avoid negative surprises, which would reflect negatively on the firm's valuation.

2.3.2.2. Contractual motivations

Recalling the stewardship role of accounting earnings, the reported earnings can be used by the firm's stakeholders as a monitoring and evaluating tool (Watts and Zimmerman 1986). More specifically, the contracting parties may develop their contractual terms based on the firm's earnings. However, incentives to misrepresent the periodic earnings may arise due to the conflict of interests between the insiders and the outsiders (Leuz et al. 2003). Therefore, managers are expected to use their discretion over accruals and make the best choice (i.e. income-decreasing or income-increasing) to influence the potential contractual outcome, given the designated contractual terms (Chung et al. 2002).

There are many examples regarding such contractual arrangements. For example, it has been constantly asserted that earnings management should be more pronounced at firms where the managers' compensation contracts are closely tied to the firms' earnings and performance (Healy 1985; Gaver et al. 1995; Holthausen et al. 1995; Guidry et al. 1999; Lambert 2001; Leuz et al. 2003; Bergstresser and Philippon 2006; Kuang 2008; Grant et al. 2009).

Debt contracts are another example where a firm's earnings reporting strategies are associated with the presence of accounting-based leverage constraints (Press and Weintrop 1990). Watts and Zimmerman (1990) and Mohrman (1996) argue that firms with higher debt-financing are more likely to manage earnings upward due to increasing pressures. Correspondingly, Sweeney (1994) and, DeFond and Jiambalvo (1994) provide evidence that managers adopt income-increasing accounting choices as a response to the threat of potential credit default.

2.3.2.3. Regulatory and tax motivations

Earnings management can also be driven by the political environment, taxation and governmental regulations (Ronen and Yaari 2008). Some renowned examples on regulatory-driven earnings management include the evidence documented by Jones (1991) on the negative discretionary accruals (i.e. income-decreasing earnings management) by firms that are under import relief investigation to benefit from the governmental protection from competing imports as well as the evidence reported by Cahan (1992) on the downward earnings management by firms under investigation for anti-trust laws.

Likewise, industry regulations can explain the firms' incentives to manage their reported earnings. Insurance industry, for instance, is one the most regulated industries as their financial health is monitored and subject to minimum requirements (Healy and Wahlen 1999). Therefore, insurance companies are likely to manage their loss reserves if they reach alarming financial indicators (Gaver and Paterson 1999; Beaver et al. 2003).

A convincing theory that has been examined several times in the literature is that managers have the incentive to decrease the present value of a future income tax expense by manage earnings downwards (Maydew 1997; Phillips et al. 2003). Firms may adopt earnings for different types of tax-planning. Dhaliwal et al. (2004) assert that firms influence their effective tax rates to manage their earnings in order to achieve their targets.

In summary, the managers' discretion over earnings can be driven by capital market motivations as earnings management is used to influence the market valuation. Moreover, earnings management may also be induced by the firm's contractual and regulatory

motivations as earnings management is used to the firm's economic results in line with the associated economic incentives and political pressures. Finally, earnings management motivations can be understood given the crucial stewardship and informativeness roles of the periodic earnings reported by firms and by assuming the potential agency problems between the management and the spectrum of stakeholders.

2.4. Capturing Earnings Management: Modelling the Normal Accruals

Identifying the managerial reporting incentive – advocated by theory – provides an essential foundation in the design of earnings management research, while assessing whether the reported earnings are actually managed remains the empirical challenge. The competing accruals-based models in the literature indicate that measuring firm's abnormal (i.e. discretionary) accruals is not an easy process (Dechow et al. 1995; Healy and Wahlen 1999).

Indeed, the crucial research designing issue, which is a common one for all models, lies in determining what the "*normal*" accruals are. Once this has been clearly defined, any potential abnormality in accruals can then be detected and used in order to proxy for managerial discretion. Therefore, shedding light on the most influential models that have contributed to the evolution of accruals-based research is crucial in understanding the underlying assumptions of the modelling of normal accruals. The following discussion focuses on five seminal and related models by the following scholars Healy (1985), DeAngelo (1986), Jones (1991), Dechow et al. (1995) and Kothari et al. (2005).

2.4.1. Healy (1985) Model

Earnings management is identified by Healy (1985) as being equal to the firm's discretionary accruals (DA_t), which are calculated as the difference between the total current accruals ($TACC_t$) and the nondiscretionary (i.e. the normal) accruals ($NDACC_t$), all scaled by the lagged total assets, denoted as follows:

$$DA_t = TACC_t - NDACC_t \tag{2.1}$$

The total accruals of a particular firm are calculated as the difference between the accounting earnings and the cash flow from operations, while the nondiscretionary accruals ($NDACC_t$) are estimated by the average total accruals for a given estimation period (EP) as follows:

$$NDACC_t = \frac{1}{EP}\sum_{j}^{EP}\frac{TACC_j}{TA_{j-1}} \tag{2.2}$$

The inference made regarding earnings management are drawn by comparing the DA_t means of samples in pairs. However, this model assumes that earnings management occurs systematically in every period (Dechow et al. 1995).

2.4.2. DeAngelo (1986) Model

Earnings management is also identified by DeAngelo (1986) as the firm's discretionary accruals (DA_t), and similarly, these are calculated as the difference between the current total accruals ($TACC_t$) and the lagged total accruals ($TACC_{t-1}$), all scaled by the lagged total assets. It can be noticed that the difference between this model and Healy's model lies in the method

by which the nondiscretionary accruals are determined. DeAngelo's model uses the lagged total accruals as a proxy for the nondiscretionary (i.e. the normal) accruals as follows:

$$NDACC_t = \frac{TACC_{t-1}}{TA_{t-2}} \tag{2.3}$$

Moreover, DeAngelo's model can be considered to be a special case of Healy's specification by restricting the nondiscretionary accruals estimation period (*EP*) to the previous year (Dechow et al. 1995). In essence, this method takes the year to year changes in the total accruals. Healy (1985) and DeAngelo's (1986) models are criticised for unreasonably assuming that the change in the levels of nondiscretionary accruals over years is equal to zero so that any change in the total accruals is solely attributed to the discretionary accruals (Jones 1991; Dechow et al. 1995; Ronen and Yaari 2008). Indeed, this cannot be empirically true as accruals are found to be changing with the firms economic circumstances, as noted in Kaplan's (1985) discussion paper of Healy's.

2.4.3. Jones (1991) Model

The main contribution of the model developed by Jones (1991) is relaxing the assumption that the firm's nondiscretionary (i.e. the normal) accruals are constant over time. Instead, Jones develops an expectation model that estimates the normal accruals over an estimation period after controlling for the effect of different economic circumstances. She uses the size of the firm's property, plant and equipment (PPE_t) and the change in revenues (REV_t) as a proxy for the effect of the economic circumstance in a regression model, a stationary relationship between the normal accruals and the explanatory variables, as follows:

$$\frac{TACC_t}{TA_{t-1}} = \alpha_1 \left(\frac{1}{TA_{t-1}}\right) + \alpha_2 \left(\frac{\Delta REV_t}{TA_{t-1}}\right) + \alpha_3 \left(\frac{PPE_t}{TA_{t-1}}\right) + \varepsilon_t \quad (2.4)$$

From this, the coefficient estimates α_1, α_2 and α_3 are used to calculate the expected total accruals of the firm. The difference between the firm's actual total accruals and its expected total accruals at time t indicates the discretionary accruals ($DACC_t$). Jones (1991) justifies the need for using the lagged total assets as a scaling factor as this procedure reduces heteroscedasticity[15].

The central critique of Jones' model is that it assumes that earnings management can only be practiced by manipulating the firm's accrual expenses, which means that it fails to capture the managers' discretion of the firm's revenues (Dechow et al. 1995). Despite this critique, Jones' model remains one of the most influential models in the area of earnings management.

2.4.4. Dechow et al. (1995) Model:

Dechow et al. (1995) improve the accruals model introduced by Jones (1991) by relaxing the assumption that revenues are not subject to managerial discretion. This model is commonly described in the literature as the *Modified Jones Model*. Dechow et al. modify Jones model by considering the change in revenues after deducting the change in trade receivables (AR_t), as follows[16]:

[15] Jones (1991) selects the lagged total assets as a deflator because she finds that they are highly correlated with the error term in the unscaled expectation model.

[16] This practice is also similar to Subramanyam and Wild (1996), DeFond and Park (1997) and Guidry et al.'s (1999).

$$\frac{TACC_t}{TA_{t-1}} = \alpha_1 \left(\frac{1}{TA_{t-1}}\right) + \alpha_2 \left(\frac{\Delta REV_t - \Delta AR_t}{TA_{t-1}}\right) + \alpha_3 \left(\frac{PPE_t}{TA_{t-1}}\right) + \varepsilon_t \quad (2.5)$$

They argue that exercising managerial discretion over the recognition of credit rather than cash revenues is much easier. Moreover, Dechow et al. (1995) estimate the coefficients in the same period in which earnings management is to be measured. Therefore, systematic earnings management is not assumed. They relax the assumption that normal accruals are constant across periods by adopting an industry matched model that assumes that factors influencing the change in normal accruals are comparable for firms in the same industry.

However, Dechow et al. (1995) report that their model, as well as the other previous accrual models, do not reject the null hypothesis of no earnings management for samples of firms with high performance.

2.4.5. Kothari et al. (2005) Model

The main contribution of Kothari et al. (2005) is that it builds upon the findings of Dechow et al. (1995) to develop an *industry-performance-matched accruals cross-sectional model*. Kothari et al. (2005) assert that the economic intuition and the existing empirical evidence suggest that firm's accruals are correlated with its current and past performance. This argument implies that accruals models, including Dechow et al. (1995) (i.e. the modified Jones model), are misspecified and produce biased results (Peasnell et al. 2000).

Kothari et al. (2005) suggest that accruals models should control for the effect of performance on measured discretionary accruals. Therefore they suggest and examine two approaches.

The first approach documented is to use the current or the lagged return on assets (*ROA*) as a proxy for the firm's performance to add it as an additional regressor to the modified Jones model, as follows:

$$TACC_t = \alpha_0 + \alpha_1\left(\frac{1}{TA_{t-1}}\right) + \alpha_2(\Delta REV_t - \Delta AR_t) + \alpha_3(PPE_t) + \alpha_4\left(ROA_{t[or\ t-1]}\right) + \varepsilon_t \quad (2.6)$$

They also argue that the modified Jones model's misspecification magnifies when the constant term is suppressed. Therefore they recommend that an intercept should be added to the model to reduce the chance of misspecification.

The second approach is performance-matching by estimating the normal accruals cross-sectionally using peer firms similar in performance. Kothari et al.'s compare the two approaches concluding that performance matching is superior to the regression approach because the relationship between performance and accruals proves to be non-linear.

In fact, Kothari et al.'s (2005) performance-matching procedure has proven successful in mitigating the misspecification of the accruals model. However, Kothari et al.'s method is criticised for not being able to perfectly correct for the growth-related model bias (Stubben 2010), while also for substantially reducing the model's power (Dechow et al. 2011).

2.4.6. Other Approaches

There have been several attempts in the literature to develop both alternative models and approaches for estimating earnings management. One such example could be the single account approach as introduced by McNichols and Wilson's (1988). This approach is based on analysing the managerial discretion over particular accounts that are affected by accounting

estimation such as bad debt expense or the firm's write-offs. The distributional approach is another method of estimating earnings management by which it is assumed that periodic earnings follow a particular distribution such that a deviation from this distribution signals earnings management (Burgstahler and Dichev 1997).

The number of attempts to develop a reliable method that captures earnings management may indicate that there is no ideal approach to measure earnings management. Having said that, Kothari et al.'s (2005) approach, which is based on Jones (1991) model in its modified version by Dechow et al. (1995), remains one of the most widely used models in the area of earnings management (see, for example, Gong et al. 2008; Das et al. 2009; Cohen and Zarowin 2010; Ghosh et al. 2010; Aerts and Cheng 2011; Louis and Sun 2011). Stubben (2010, p.695) affirms that researchers have "addressed and continue to address earnings management using these models, presumably because few viable alternatives exist".

2.5. Summary and Conclusion

In the field of accounting, there is no well-defined economic construct for income given that there is no theory that can provide an ideal prescription of accounting policies. However, in our imperfect and incomplete world, corporate reporting in general and accounting earnings in specific play fundamental roles for the wide spectrum of stakeholders (Fields et al. 2001). These roles are primarily centred in stewardship and informativeness. Given the agency relationship between managers and their principals, the importance of the stewardship role of reporting earnings stems from the fact that managers have control and use over the firm's resources and, naturally, are accountable to their principals. In addition, accounting earnings represent a substantial source of information that users can rely on when assessing the firm's

risk and potential for future cash flows (Jensen and Meckling 1976; Watts and Zimmerman 1986; Bushman and Smith 2001; Lambert 2001; Bushman et al. 2006; Drymiotes and Hemmer 2009). In other words, accounting earnings affect the firm's value and influence the behaviour of decision-makers, as the concept of economic consequences suggests (Zeff 1978).

In an attempt to investigate the implications of the informativeness role of accounting earnings, which is greatly stimulated by the development of the Efficient Market Hypothesis, an ample amount of empirical research has addressed the value-relevance of accounting information by considering the association between accounting earnings and share prices (see, for example, Ball and Brown 1968; Beaver 1968; Fama 1970; Watts and Zimmerman 1986; Holthausen and Watts 2001).

Within the context of agency problems and information asymmetries, and as a result of the management team's awareness of the substantial roles of accounting earnings and their impact on the stakeholders' decisions, managers may have the motivation to direct their (within-GAAP) discretion with the aim of influencing the reported earnings upwards or downwards - depending on their objectives (Sweeney 1994; Healy and Wahlen 1999; Riahi-Belkaoui 1999; Beneish 2001; Phillips et al. 2003). As a least-noticeable and least-cost option, managers normally chose to manipulate the accrual component of earnings (Phillips et al. 2003). Such a practice is often referred to as earnings management, which can be, more specifically, driven by capital market incentives (i.e. impacts on market valuation) (Chambers and Penman 1984; Houmes and Skantz 2010), contractual incentives (i.e. managerial compensation and accounting-based debt covenants) (Watts and Zimmerman 1986; Leuz et al. 2003) and regulatory and taxation incentives (Jones 1991; Beaver et al. 2003).

Table 2.1 Summary of the commonly used accruals models

Model	Formula	Approach	Critique
Healy 1985 Model	$NDACC_t = \frac{1}{EP}\sum_{j}^{EP}\frac{TACC_j}{TA_{j-1}}$	*The normal accruals are estimated as the average total accruals for a given estimation period prior to the period of interest.*	*The model assumes that earnings management occurs systematically every period.*
DeAngelo 1986 Model	$NDACC_t = \frac{TACC_{t-1}}{TA_{t-2}}$	*The normal accruals are determined as the lagged total accruals. This is a special version of Healy's model where the estimation period available consists only of one year.*	*The model assumes that firm's normal accruals do not change from year to year, while accruals are changing with the firm's economic circumstances.*
Jones 1991 Model	$\frac{TACC_t}{TA_{t-1}} = \alpha_1\left(\frac{1}{TA_{t-1}}\right) + \alpha_2\left(\frac{\Delta REV_t}{TA_{t-1}}\right) + \alpha_3\left(\frac{PPE_t}{TA_{t-1}}\right) + \varepsilon_t$	*The normal accruals are estimated as a function of revenue growth and the size of the firm's property, plant and equipment.*	*The model assumes that accrual revenues are not subject to the managers' discretionary power.*
Dechow et al. 1995 (Modified Jones) Model	$\frac{TACC_t}{TA_{t-1}} = \alpha_1\left(\frac{1}{TA_{t-1}}\right) + \alpha_2\left(\frac{\Delta REV_t - \Delta AR_t}{TA_{t-1}}\right) + \alpha_3\left(\frac{PPE_t}{TA_{t-1}}\right) + \varepsilon_t$	*A modified version of Jones model that considers the change in revenues after deducting the change in trade receivables. They argue that exercising managerial discretion over the recognition of credit revenues is much easier than exercising discretion over cash revenues.*	*The residual is highly correlated with the firm's performance. Null hypothesis cannot be rejected for firms with high performance due to the bias of estimation.*
Kothari et al. 2005 (Performance-Matched) Model	$TACC_t = \alpha_0 + \alpha_1\left(\frac{1}{TA_{t-1}}\right) + \alpha_2(\Delta REV_t - \Delta AR_t) + \alpha_3(PPE_t) + \alpha_4\left(ROA_{t[or\ t-1]}\right) + \varepsilon_t$	*A modified version of Dechow et al. model that controls for the effect of performance by either adding ROA as an additional regressor or by using performance-matched portfolios, which proved to be a better approach.*	*The model cannot perfectly correct for the growth-related model bias. Controlling for performance reduces the model's power.*

Given that a firm is a nexus of contracts, the motivations and practices underlying earnings management can be explained and predicted by the aforementioned Positive Accounting Theory. An earnings management hypothesis can take either the efficient form or the opportunistic form, since the Positive Accounting Theory assumes that managers are rational individuals. It should be noted that the positivist orientation of this research – and earnings management research in general – does not seek to find the optimal methods that firms should adopt in order to report their earnings (Watts and Zimmerman 1986). Rather, the emphasis is on explaining and predicting the managerial practices when they actually report the earnings. Hence, this thesis contributes to the literature that aims to understand why, when and which firms may decide to chose particular accounting methods to engage earnings management as well as how users may react to the adopted accounting practices (Scott 2003).

There is no perfect measure for assessing earnings management, despite the several attempts in the extant literature. However, the performance-industry matched accrual models (summarised in Table 2.1) are among the most reliable and widely used in the literature, primarily the model of Kothari et al. (2005). This model is an improved version of the modified Jones (1991) model (Dechow et al. 1995), which assumes that normal accruals are the average accruals cross-sectionally of peer firms that operate within the same industry sector and have similar performance.

The overview on accounting earnings and earnings management provided in this chapter presents a generic foundation based upon which several research questions can be addressed in

this thesis. Further and more detailed theoretical and methodological concerns are tackled in the following chapters respective to the specific research question addressed, as explained in the introductory chapter at the beginning of this thesis.

Chapter 3. Event-Specific Earnings Management: Evidence from US M&A Pre- and Post-SOX

Chapter 3

Event-Specific Earnings Management: Evidence from US M&A Pre- and Post-SOX[17]

3.1. Introduction

Since the enactment of Sarbanes-Oxley (hereafter SOX) in 2002, the debate regarding its implications on corporate reporting and governance consequences has been on-going (see, for example, Ashbaugh-Skaife et al. 2008; Madura and Ngo 2010). The debate has been recently become extended to include several research areas in financial accounting including earnings management (Cohen et al. 2008), in market efficiency and major business transactions such as mergers and acquisitions (hereafter M&A) (Chelikani and D'Souza 2011).

As shown in the previous chapter, some of the primary concerns in the research area of financial accounting have centred on establishing how to detect and measure earnings management, understanding the managerial incentives that are behind the manipulation of corporate earnings and relating earnings management to certain characteristics of a firm practicing such behaviour. Healy and Wahlen (1999) noted that there are still many directions worthy of investigation in this area of research such as the implications of earnings management on resource allocation, and of the level of earnings management in special events. Since the review paper of Healy and Wahlen was published, there has been a greater concern

[17] A major part of Chapter 3 was presented in *the 11th International Doctoral Conference of the Faculty of Finance and Accounting, University of Economics Prague*, Czech Republic, on May 28th, 2010 and won the Best Paper Award. The title of the paper was "*Earnings Management in US M&A: Pre and Post-SOX Investigation*."

centred upon investigating earnings management around specific events as well as examining managerial decisions around which earnings management may have been motivated with the manipulation of corporate reports.

The debate over how to correctly identify earnings management has inevitably fed into one concerning reliable empirical measures, as discussed previously in Chapter 2. Different researchers will measure earnings management according to how they define it in relation to their particular research frameworks. However, a common trait seen is that many measurement methods seek proxies that can directly indicate a management's exercise of its discretionary power to influence corporate earnings. Managerial discretionary power can be exercised over the accrual component of the reported earnings and it is for this reason that most researchers' focus is directed toward investigating this variable (see, for example, Healy 1985; DeAngelo 1986; Schipper 1989; Jones 1991; Dechow 1994; Louis 2004; Kothari et al. 2005; Gong et al. 2008; Ronen and Yaari 2008).

The mathematical detection of abnormal patterns in accruals *per se* does not carry significant and meaningful implications unless they are linked to the potential underlying managerial motives. Therefore, researchers in earnings management tend to document the managerial endeavours of inflating (or deflating earnings) by manipulating the accrual component of the reported earnings prior to particular events in an attempt to provide convincing predictions related to both the managerial incentives to manage earnings and the direction of such manipulation.

Examples of such business events are plentiful including management buy outs (see, for example, Perry and Williams 1994), seasoned equity offerings (see, for example, Rangan 1998; Teoh et al. 1998) and mergers and acquisitions (for example see Erickson and Wang 1999). This study focuses on the merger and acquisition event to document potential earnings management by the engaged parties, since it could be argued that M&A activity can present an ideal incentive for each party to undertake such techniques as they have a motivation to be portrayed in the most attractive manner near the time of transaction.

Corporate mergers and acquisitions are a major research topic on its own generating greater interest whenever a new wave of M&A ripples capital markets and adds event-specific data to databases. The recent M&A wave in 2006 was driven by the process of globalisation, industry consolidation trends and the rise in commodities' prices (DePamphilis 2007). This M&A wave became even more pronounced in the US market, the largest market in the world in terms of M&A activity[18].

In M&A deals there are two parties inevitably involved, each of which, in theory, seeks to maximise their own gains from the deal. Hansen (1987, p.76) describes this transacting process as "*a two-agent bargaining game under imperfect information*." Given this situation of asymmetric information, and considering how crucial the reported numbers are in the financial statements of both sides to their decisions regarding any M&A deal, it is argued that each side of the deal may have incentives to manipulate the numbers, which is not a costless procedure, however, prior to closing the deal (Erickson and Wang 1999).

[18] About 24% of the global mergers and acquisitions are performed by a US based acquirer during 2008 (Source: *Thomson One Banker* database).

Despite the low number of studies that have investigated pre-merger earnings management (such as, Erickson and Wang 1999; Louis 2004; Botsari and Meeks 2008; Pungaliya and Vijh 2008), the literature still reveals conflicting empirical evidence. The inconsistency of the outcome of previous studies is attributed to different observable and unobservable factors such as different research designs (i.e. the definition, the method and the timing of measuring earnings management), the different procedures applied for deals' sampling and the peculiar nature of each deal (i.e. the enormous possibilities of engaged parties' industries combinations, prior undisclosed relation between parties, attitude of deal …and so forth). Given this debate and relative lack of empirical studies in this area, further investigation will undoubtedly prove rewarding.

Interestingly, evidence obtained by most related studies in the US (see, for example, Easterwood 1997; Erickson and Wang 1999; Louis 2004; Baik et al. 2007) has been obtained using samples of deals completed before the renowned legislation Sarbanes Oxley Act of 2002. Within the researcher's knowledge, there is no study that conducts a concurrent investigation of *event-specific abnormal accruals* before and after the enactment of SOX. Instead, the literature has been more concerned with investigating the quality of earnings by constantly comparing *the general level of the signed or absolute value of discretionary accruals*[19] of all firms in the market before and after the enactment of SOX (see, for example, Cohen et al.

[19] Since there is no single definition of earnings management, researchers define earnings management depending on the contexts of their studies. It is not surprising that the general level of discretionary accruals, signed or unsigned, is often described as earnings management like in Cohen et al (2008), Bartov and Cohen (2009) and Ghosh et al (2010). However, Zhou (2008) makes a clear distinction that studying the general level of discretionary accruals is for examining the overall conservativeness or the aggressiveness of the trending reporting behaviour.

2008; Zhou 2008; Bartov and Cohen 2009; Wilson 2009; Chambers et al. 2010; Ghosh et al. 2010; Iliev 2010).

In the wake of major accounting scandals in the US in 2001 and 2002 (i.e. the cases of *Enron* and *WorldCom*), SOX was enacted with the aim of preventing corporate failure resulting from intentional or unintentional misstated financial reports[20]. Some researchers provide evidence that corporate financial reports have become more reliable after SOX since internal controls were improved (see, for example, Rittenberg and Miller 2005), and that the implementation of SOX resulted in significantly less earnings management (see, for example, Cohen et al. 2008; Iliev 2010) or in other words higher accruals quality (see, for example, Ashbaugh-Skaife et al. 2008). Others, however, have argued that post-SOX accounting reports have become conservative, which does not necessarily infer they are of a higher quality (Zhou 2008).

In a very recent review paper, DeFond (2010) asserts that SOX continues to provide avenues for earnings management research despite the various studies that have already been published. He argues that "many of them were done before SOX is likely to have reached a state of equilibrium (DeFond 2010, p.405)", indicating that SOX provided many vital changes to the earnings quality environment, which would take years for the full effects to be felt.

Furthermore, despite the fact that M&A transactions are not specifically and explicitly mentioned in SOX, there are major changes in the behaviour of M&A candidates since SOX, such as an increased reliance on financial and legal advisors (Madura and Ngo 2010).

[20] Sections 302 and 404 of Sarbanes-Oxley Act require a set of procedures by firms to ensure accurate financial reporting and to report on the competence of internal controls over financial reporting.

Motivated by the above facts, this research addresses the question of whether firms' pre-merger earnings management after the enactment of SOX has been significantly different from its level in the pre-SOX era. More specifically, this study explores the different patterns and timing of pre-merger earnings management as well as the differences in earnings management practices between pre and post-SOX eras in public firms engaged in mergers and acquisitions (i.e. acquiring and target firms). The sample used in this study is selected to include M&A deals completed in both eras, before and after SOX, as described in detail in the sampling procedure in section 3.4.3.

This study contributes to the existing literature in a number of ways. First, it tests earnings management occurrences for each of the last four quarters prior to deal announcement not only for the acquiring firms, but also for their targets concurrently by using a sample that includes M&A deals before and after SOX was enacted. Second, it adds to the growing body of the literature regarding the on-going debate of the effectiveness of SOX in improving the credibility of financial reporting by investigating a structured sample of firms that have the motivation to practice earnings management – merging firms. Finally, by using quarterly reports, which are available by the US reporting environment, this study makes a further twofold contribution. On the one hand, quarterly statements are superior to annual ones in terms of their timeliness. Therefore, this study provides a track of the managerial discretion over accruals in the previous four successive quarters prior to a deal's announcement in order to precisely locate the timing of manipulating earnings. On the other hand, since quarterly statements are not audited by an external auditor unlike annual reports, this study provides an

insight to some implications of SOX on the interim reporting practices, as Ashbaugh-Skaife et al. (2008) suggested for future research.

The results reported in this chapter reveal evidence of earnings management by acquirers. Acquirers' which endeavour to manage earnings are found to do so in two to three quarters prior to the announcement date of the M&A. As expected, the magnitude of positive earnings management is higher and more robust for acquirers that offer their equity in the payment structure, while no earnings management is found for those acquirers that offer pure cash to their targets. This evidence on the acquirers' side does not only hold with the pre and post-SOX segregation, but also shows greater magnitude of positive earnings management in the post-SOX period.

No evidence of earnings management is documented for an aggregate sample of targets of deals completed before and after SOX. Nevertheless, there is empirical evidence, interestingly, of earnings management by post-SOX targets in the last quarter just before announcing a merger deal, which at first glance seems to conflict with the notion that greater governance requested by SOX should result in deterring management from earnings manipulation. This study reports rare evidence on targets' upward earnings management.

The unexpected results of greater pre-merger earnings management in post-SOX can be explained by the general shift of US firms managerial discretion after SOX toward more conservative accrual reporting (see, for example, Cohen et al. 2008). This shift affects the cross-sectional results of earnings management associated with a particular event such as a

M&A, assuming that managerial motivation to pre-merger earnings management remains unchanged after SOX.

The remainder of this chapter is organised as follows. Section 3.2 reviews the literature of earnings management in M&A while section 3.3 states the hypotheses tested in this study. Section 3.4 illustrates the sampling procedure and the methodological framework. Section 3.5 reports the results and section 3.6 provides a summary of the final concluding remarks.

3.2. Literature Review

Both the target and the acquiring firms may have incentives to manage earnings prior to the event. Section 3.2.1 is intended to review the existing evidence of earnings management in target firms while section 3.2.2 discusses the literature related to earnings management by acquirers. Section 3.2.3 sheds light on key papers that discuss the implications of SOX on earnings management and section 3.2.4 provides a summary outlining how this study distinguishes itself from existing literature.

3.2.1. Evidence of Earnings Management by Targets

Managing earnings by target firms near M&A deals is subject to many factors including the existence of a motivation to do so, which has been among some of the main questions tackled by researchers.

Easterwood (1998) uses a sample of firms that experienced a takeover attempt, regardless of the eventual deal outcome, to investigate whether managers of firms that are targets of a takeover attempt systematically manage reported earnings upward in the quarters preceding

and following the initiation of a takeover. She argues that firms may have a motivation to manage earnings upward before mergers to show the acquirer's shareholders that their firm is performing well. The empirical evidence supports the earnings management hypothesis in the quarter immediately preceding the deal but no evidence of earnings management is found in the quarter following the deal. This is reasoned as being due to the fact that the target manager has no motivation to manage the earnings of the firm after a merger has been announced.

In an attempt to understand the real motivation behind earnings management (i.e. opportunism versus value maximisation), Christie and Zimmerman (1994) adopt a methodology in which they chose a non-random (i.e. purposeful) sample including firms that became eventual takeover targets. They report a higher use of income-increasing accounting methods in the last 11 years before a firm becomes a takeover target. The persuasiveness and relevance of the evidence presented in their work to M&A deals is not direct since it has largely been obtained through comparing the change in choice over the firm's accounting policy throughout a long-standing period prior to the takeover event relating a sample of target firms to a control group consisting the surviving peer firms in the same industries. In fact, the methodology employed was intended to primarily explain the reasons behind accounting methods and efficiency versus opportunism. In this way, their findings cannot be interpreted in light of true M&A dynamics.

Measuring earnings management by examining accounting methods is highly criticised since the effect of implementing one accounting method may offset the effect of implementing another (Watts and Zimmerman 1990). For this reason, Easterwood (1998) measures abnormal accruals within empirical tests and reports that targets of hostile acquisitions have a stronger

motivation to manage earnings than those subject to a friendly approach. Therefore, targets' managers in hostile takeovers believe that managing earnings upward could serve as a management entrenchment procedure and as a defensive response to the proposed takeover. Although Easterwood's approach in measuring earnings management ignores the influence of economic circumstances on accruals due to the application of DeAngelo's (1986) accruals model[21], she does emphasise the impact of takeover attitude (i.e. hostile versus friendly) on the managerial motive to manipulate earnings.

In a more recent study which focuses on friendly M&A deals, Ben-Amar and Missonier-Piera (2008) document evidence based on annual data from Switzerland indicating that targets of friendly acquisitions manage earnings downwards in the year preceding the M&A deal. These findings suggest that targets' motivations may be different toward earnings management, if the M&A deal was conducted in a friendly environment. Consequently, comparing the results of Easterwood (1998) regarding hostile takeovers with the evidence pertaining to friendly acquisitions as provided by Ben-Amar and Missonier-Piera (2008) raises questions on the relationship between earnings management and anti-takeover procedures (see , for example, Jiraporn 2005; Zhao and Chen 2008).

In another study concerning the managerial motive to manage earnings, Eddey and Taylor (1999) investigate whether Australian firms engage in earnings management during takeover bids. They propose that directors may inflate earnings using discretionary accruals in order to

[21] DeAngelo assumes that any change in total accruals is due to change in discretionary accruals and, unlike Jones' (1991), DeAngelo's model does not consider the impact of economic circumstances on accruals when estimating the abnormal accruals.

support their rejection of a M&A bid by showing that the bid, in relation to earnings, is inadequate. In examination of this proposition, they primarily focus on opportunism. The findings of Eddey and Taylor's study indicate that target firms' directors tend to manage annual earnings upward (downward) to support their recommendation to reject (accept) the bid offer. Detecting this opportunistic behaviour empirically by target directors to keep their positions seems interesting since this managerial behaviour exemplifies the agency problem between management and shareholders.

Eddey and Taylor's interpretation of the evidence implies that the sign of the pre-merger abnormal accruals can be a clear signal of the managerial position towards a proposed takeover bid. However, this signalling proposition could be characterised as naïve as it falls short of fully considering other potential implications of manipulating accruals around M&A bids.

In contrast with Eddey and Taylor's (1999) proposition, Meisel (2006), in a theoretical paper, introduces a more sophisticated perspective concerning the implications of pre-merger earnings management by targets. On the one hand, Meisel argues that firms near takeover candidacy could have an incentive to manage earnings upward, either to increase their attractiveness as a target by showing the acquirer's shareholders that it is performing well, or by using it as an anti-takeover defence procedure believing that by increasing their own value effectively rendering their firm unaffordable for the potential bidder(s).

On the other hand, Meisel (2006) argues that targets may have an incentive to manage earnings downward as a pre-merger procedure in order to boost the acquirer's post-merger

share returns, which is backed by the big bath theory[22]. Alternatively by managing earnings downward to portray the target as a bad investment allows for the management to entrench itself against undesired takeovers. This theoretical view, whilst fairly holistic in considering a wider range of potential managerial motivations, still lacks supporting empirical evidence. However, Chen et al. (2011) provide recent evidence of targets' attempts to manage earnings downwards in the period between a deal's announcement and completion, which provides support to the prediction of the big bath theory.

In contrast, the empirical evidence of Erickson and Wang (1999), Koumanakos et al. (2005) and Baik et al. (2007) does not provide support to the earnings management proposition of target firms since their studies report positive but insignificant pre-merger abnormal accruals by targets. The weak findings of the targets' pre-merger earnings management are explained by the timing of the acquisition and attributed to the targets' late awareness of a takeover plan.

Despite the inconsistency throughout the evidence reviewed, there is no persuasive reason to forfeit the economic incentive proposition for target firms. Moreover, target firms at times do not need to wait until they are approached by a successful bidder in order to start manipulating their earnings, particularly if the ex-ante probability of becoming a target is high, as Braga-Alves et al. (2010) suggest.

[22] Meisel (2006) refers this point to Zucca, L. J. and Campbell, D. R. (1992). *A Closer Look at Discretionary Writedowns of Impaired Assets,* Accounting Horizons, (September) 30-41.

3.2.2. Evidence of Earnings Management by Acquirers

Unlike targets, acquirers normally have control over M&A timing and are able to plan their strategic investment decisions in advance. Therefore, time limitation is not an issue for a bidder and assuming that they have the motivation to manage their earnings, they should theoretically be more successful manipulating their earnings compared to their targets.

Using a sample of acquiring firms conducting deals which successfully completed in Greece, Koumanakos et al. (2005) examine whether acquirers manipulate accounting earnings upward before the initiation of the deal. They argue that the directors of the target and the acquirer rationally anticipate that the other will manage earnings pre-merger to their advantage, which would motivate acquirers to manage earnings as a proactive plan. However, there is positive evidence reported supporting their claim, although this is predominantly weak.

Similarly, Erickson and Wang (1999) and Botsari and Meeks (2008) provide significant evidence of pre-merger earnings management only for those acquirers that used their equity shares in the deal's payment structure offered to the respective target firms.

Erickson and Wang (1999) explain that if managing earnings upwards does usually inflate an acquirer's share price then the cost of the deal reduces if these inflated shares are used to remit the target's shareholders. This is argued as being due to the exchange ratio of the deal (i.e. the number of shares given up by the acquirer in exchange of one target equity share) which is negatively associated with the market value of the acquirer's share.

Despite the theoretical significance of Erickson and Wang's paper (1999), which has become the groundwork of later studies in the same research area, their methodology of measuring earnings management could be criticised since they use time-series data[23] for estimating abnormal accruals instead of cross-sectional data (Kothari et al. 2005).

Botsari and Meeks (2008) evidence is obtained from a cross-sectional estimation of abnormal accruals. However, their evidence of pre-merger earnings management lacks the measurement timeliness as they use annual data from the UK in capturing abnormal accruals in the last statement before the official announcement date of the M&A deal.

Similar criticism related to the use of annual data can be applied to the work of Koumanakos et al. (2005), whose research is based on Greek data. Furthermore, Koumanakos et al. (2005) findings are based on a sample of acquirers that were selected regardless of their method of payment, which leaves open questions concerning the robustness of their evidence after stratifying their sample of acquiring firms according to the payment method. A crucial theoretical issue evolves when explaining the evidence of earnings management, if any, in those studies that overlook the importance of considering the deals' method of payment since the incentive of acquirers' pre-merger earnings management is clearly supported by theory only if equity shares are used in the payment structure (for further discussion of this point, see section 3.3.3).

[23] This exposes the sample to survival bias because of requiring a long time series of data for each acquiring firm, for instance (Kothari et al, 2005).

Louis (2004), Baik et al. (2007), Asano et al. (2007), Gong et al. (2008), (2008), Guo et al. (2008), Lee et al. (2008) and Alsharairi and Salama (2011), among others, present empirical evidence on pre-merger upward earnings management by acquirers after they segregate their samples according to the method of payment.

In an event study, Louis (2004) does not investigate earnings manipulation, but rather tests the market's efficiency in processing the managed (i.e. manipulated) reported earnings to explain the post-merger share underperformance. He reports strong evidence of upward earnings overstatement by acquirers which offer equity shares in the transaction, in the quarter preceding the deal's announcement.

Baik et al. (2007) provide additional evidence on earnings management using a sample of share swap acquirers whose targets are privately held companies. Normally, there is less information available regarding private firms compared to public ones because private firms receive less attention from stakeholders and regulatory agencies those publicly listed. For this reason, Baik et al. (2007) argue that acquirers would have a much greater incentive to manage earnings prior to their acquisition if the respective target was privately held in order to make up for the relatively higher level of information uncertainty.

Using a sample Japanese share-for-share acquirers, Asano et al. (2007) document evidence of pre-merger earnings management, consistent with the results of Erickson and Wang (1999) and Louis (2004). Moreover, they report a negative market reaction to the earnings overstatement during the last two-interim periods preceding the deal's announcement.

Lee et al. (2008) obtain similar evidence of pre-merger earnings management by examining a sample of acquiring firms from the telecommunications industry in the US.

Beyond the mere examination of whether or not earnings management does actually exist, Gong et al. (2008) shed light on the negative consequences of fooling the market as a result of overstating the accrual component of the announced earnings. Specifically, they examine the association between pre-merger earnings management and the post-merger probability that the practicing acquirer would be sued. Their empirical evidence suggests that earnings management increases the probability of lawsuits against the share-for-share acquirer. Gong et al. recommend that investors should not only consider the cost of undoing the share price effect of pre-merger earnings inflation, but also the expense of contingent legal costs that can be associated with earnings management.

Interestingly, Guo et al. (2008) investigates the acquirers' attitudes to influencing their share price prior to share swap mergers. They not only report evidence of acquirers' upward pre-merger earnings management to manipulate the valuation of their shares so that they become overvalued, but they also document acquirers' systematic attempts of splitting their shares prior to share swap deals, motivated by the assumption that a share split will delay the market's correction of the misvalued share price.

In addition to documenting evidence of pre-merger earnings management, Alsharairi and Salama (2011) find a strong negative association between the industry-adjusted leverage level of acquirers and the magnitude of earnings management. Their evidence suggests that

creditors' monitoring role and debt covenants limit the managerial ability to exercise managerial discretion over the reported earnings.

The relative size of the target to the acquirer in share swap mergers is often used to proxy for the economic incentive to manage earnings suggesting that the larger the relative size of the target, the greater the economic incentive for the acquirer to manage earnings prior to offering shares in the deal's payment structure (Pungaliya and Vijh 2008).

However, the literature does not reveal consistent empirical evidence of earnings management by equity-paying acquirers. Moreover, the findings of Heron and Lie (2002), and Pungaliya and Vijh's (2008) do not support the earnings management hypothesis even after stratifying their sample for the method of payment used. Applying the modified Jones model on a sample of acquirers whose targets are public firms, Heron and Lie (2002) find no evidence to link the method of payment in acquisitions to the use of discretionary accruals by acquirers. Likewise, Pungaliya and Vijh (2008) show that the discretionary accruals for a large sample of share swap acquirers are insignificantly different from zero as well as the discretionary accruals for cash acquirers.

Mixed evidence has driven the focus of related research to examine the cause and effect relationship of earnings management in M&A with different variables. Pre-merger earnings management by the acquirer is found to have a positive relationship with post-merger lawsuits (Gong et al. 2008), with the target's private listing status (Baik et al. 2007), or with the relative size of the deal value (Erickson and Wang 1999). There is a noted negative relationship,

however, with the acquirer's long-term performance if the merger is financed with shares (Louis 2004).

3.2.3. Sarbanes-Oxley and Earnings Management

The year of 2002 - the year in which SOX was effective - was marked as beginning of a new era of corporate reporting and governance practices. Since the passage of SOX, researchers in both academia (see, for example, Lobo and Zhou 2006; Ashbaugh-Skaife et al. 2008; Cohen et al. 2008; Lobo and Zhou 2010) and in the profession of financial accounting (see, for example, Chambers et al. 2010) have naturally been curious to answer the controversial question of whether accounting reports have indeed become more credible or indeed, more accurate. The ramifications of SOX are numerous and, therefore, the discussion here is limited to the empirical evidence available relating to SOX and its implications specifically toward earnings management and M&A.

In an exploratory study, Braiotta and Zhou (2006) investigate the new legal and regulatory environment created by SOX and its effect on the audit committee given its pivotal role in stressing the quality of financial reporting. Among their findings, they report a negative relation between earnings management, measured by Jones' (1991) model as modified by Kothari et al. (2005), and audit committee alignment associated with SOX requirements. However, they fail to compare the level of earnings management among different periods. Moreover their work is subject to a limited sample range which includes the year 2002 as a post-SOX sub-period. Thus, their conclusions regarding the quality of financial reporting improvements cannot be generalised to a larger population.

Despite the time span limitation of sampling in a post-SOX period, the critique of small sample size was overcome in a study by Lobo and Zhou (2006) where the authors employed a large dataset of firms two years before and two years after SOX. The main purpose of their study is to investigate the change in managerial discretions over financial reporting following the enactment of SOX. Their findings indicate that firms' abnormal accruals significantly decline in the post-SOX period. Lobo and Zhou (2006) describe this overall decline in the reported discretionary accruals as a shift toward a conservative accounting practice in the post-SOX era. In later research, Lobo and Zhou (2010) use data for a sample of Canadian firms dually listed on Canadian and US stock exchanges for the same event window - two years before and two years after SOX. They focus on examining the effect of SOX on the extent of aggressiveness versus conservativism by dually listed public firms. Interestingly, they provide similar evidence of increased conservative accounting practice (i.e. lower discretionary accruals) in the post-SOX period. Moreover, the results of a matched control sample of firms listed only on Canadian stock exchanges (i.e. firms that are not subject to the influence of SOX) displayed no significant difference in discretionary accruals between pre and post-SOX periods.

In contrast Cohen et al. (2008) provide a study that examines whether the degree of earnings management declined after the passage of SOX. The findings of their study indicate that the level of earnings management in the post-SOX period has declined to levels closer to those of the period prior to the well-documented scandals, after identifying the scandals' period as the years 1998 to 2001. Unlike Lobo and Zhou's (2006) research methodology, Cohen et al.'s methodology processes the sign of the abnormal accruals focusing on the accruals' quality,

which of course affects the definition of earnings management in the context of their study. They investigate the trend in the absolute value of abnormal accruals before studying the trends of each of the positive and the negative abnormal accruals as subsamples. This practice is common in studies that do not predict a particular direction for the abnormal accruals.

Ashbaugh-Skaife et al. (2008) investigate the impact of SOX requirements for reporting on the effectiveness and deficiencies of internal control over financial reporting on accruals quality and financial information reliability. They provide similar evidence suggesting that the requirements of SOX do improve the quality of accruals, which implies that less earnings management takes place. Their findings were drawn from firms that remediated their SOX internal control deficiencies according to Section 404 of SOX[24].

In an attempt to reconcile the conflicting results of the earlier studies , Zhou (2008) pointed in his paper "*Financial reporting after the Sarbanes-Oxley Act: Conservative or less earnings management?*" that different treatments of the sign of the abnormal accruals results in different interpretations to the findings since conservatism (i.e. abnormal accruals without any treatment to the sign) and "less earnings management" (i.e. the absolute value of the abnormal accruals) have different implications for financial reporting. For that reason, he provides evidence in his work from a simultaneous examination of conservatism and earnings management suggesting that firms have been reporting more conservatively as well as engaging in less overall earnings management since the enactment of SOX. Thus, the results do not seem to disagree with the conclusions of Cohen et al. (2008) or Lobo and Zhou (2006)

[24] For more detailed information concerning Section 404 of SOX, please see section 2.3.4.2 of this chapter.

since the concepts of conservative accounting and earnings management do not necessarily contradict one other.

Adding to the above empirical studies, which are based on the firms' annual earnings, Chang and Sun (2009) and Iliev (2010) investigate whether the provisions of SOX have in fact improved the quality of earnings, as proxied by the level of earnings management. Their findings advocate the belief that corporate governance functions required under SOX have improved the quality of earnings (i.e. it has limited the practice of earnings management) as measured by the level of signed or unsigned (i.e. absolute value) discretionary accruals.

In a different study, this time based on quarterly earnings unlike the studies above, Bartov and Cohen (2009) examine the change in the pervasiveness of earnings management to meet or beat analysts' expectations in the post-SOX period. Their evidence indicates that the frequency of meeting or beating financial analysts for quarterly earnings has declined in the post-SOX period, a fact attributed to a relative decline in accruals-based earnings management since SOX.

In contrast to the wealth of literature that seems to support the mitigating effect of SOX on earning management, Wilson (2009) and Ghosh et al. (2010) provide results indicating that there has been no increase in the quality of reported earnings since the enactment of SOX. Furthermore, these studies fail to provide any significant evidence that SOX has impacted earnings management. Both studies' control for factors believed to influence discretionary accruals including some corporate governance factors. However, these studies fall short of explaining how uncorrelated SOX potentially is to the control variables. Moreover, the

univariate analysis of Ghosh et al. (2010), which compares earnings management's proxies in pre and post-SOX periods, indicates that earnings management has significantly declined after the enactment of SOX.

Recently, Chambers et al. (2010) survey the recent research about the effectiveness of SOX in order to examine whether SOX has indeed led to better financial reporting. Unconvincingly, they conclude that the quality of the financial reporting environment has improved since SOX, while they hold the perception that "[t]he research is not yet at the point where an overall cost/benefit comparison can be made" (p.27).

3.2.4. Summary and Potential Contributions to Literature

The analysis of the related literature reveals a number of issues of interest for further investigation. First, although the body of research in the area of earnings management in M&A agrees on the motivational framework of the pre-merger earnings management by the acquirer and the target, the empirical evidence in the literature does not enjoy consistency on either side of the transaction. Heron and Lie (2002) suggest that this is due to the extremely wide range of sample sizes and sampling procedures implemented by previous studies.[25] In addition to the complicated nature of M&A deals, it could also be argued that the vagueness of the real managerial incentives literature, the timeliness of the accounting data used in measurement, the variation in the countries' regulatory frame, and the differences in the models employed to measure the abnormal accruals, may be behind this mixed evidence.

[25] For example the sample size included in the study of Botsari and Meek (2008) consists of only 42 acquirers while Pungaliya and Vijh (2008) included up to 2,614 acquirers.

Second, prior research seems to neglect the significance and the relevance of SOX provisions to the dynamics of earnings management and M&A's. After SOX, it has been argued that earnings manipulation is discouraged and that acquirers are requested to validate their merger motives, resulting in a lower level of information asymmetry (Madura and Ngo 2010). Recently, there has been a growing interest towards documenting evidence in wake of the claimed consequences of SOX and its effectiveness in increasing the transparency of financial reporting (Heron and Lie 2002; Rittenberg and Miller 2005).

Finally, the amount of research on the controversial influence of SOX on earnings management has repeatedly considered random samples of firms that do not necessarily have the motivation to manage their earnings, while tests have been designed and based on annual earnings cross-sectionally. Hence, their findings are relevant to describe the overall trend in abnormal accruals but they might be problematic if used to make inferences about the influence of SOX on managerial practices (i.e. managing earnings) that may not be initially intended and planned by management.

In summary, this study contributes to the existing literature in two ways. First, it extends the previous research of earnings management in M&A by considering SOX while investigating the different patterns and timing of pre-merger earnings management. Second, it also contributes to the area of the consequences of SOX by comparing earnings management between pre and post-SOX periods, using a non-random (i.e. structured) sample of firms that are believed to have the incentive to manage their earnings.

3.3. Theoretical Framing and Hypotheses Development

3.3.1. Why Do Firms Manage Earnings before M&A?

Research on earnings management has suggested different motivations for managing a firm's earnings from the perspective of it managers, as discussed previously in section 2.3.1 of Chapter 2. The decision to manage earnings could stem from particular economic, financial, political or social incentives. A class of these incentives is represented by the *capital market incentives*, which are explained by the informativeness role of the reported earnings and their value-relevance from the perspective of investors (Chambers and Penman 1984; Houmes and Skantz 2010). Therefore, managers may naturally think to employ an earnings management policy in order to influence the market's expectations regarding the firm's risks and cash flow prospects – and eventually alter the firm's equity value (Waymire 1984; Payne and Robb 2000; Burgstahler et al. 2006; Bartov and Cohen 2009).

The advances in earnings management-related theories provide examples on how empiricists tend to adopt a case-specific approach, unlike theoreticians who look for generalisations (Ronen and Yaari 2008). So in a M&A context, deals are normally completed by paying the target's shareholders 100 percent cash, 100 percent equity, or via offering a combination of both. In order to complete the transaction process, regardless of the structure of the payment method, the target should perceive that the consideration offered by the bidder is equal or greater in value when compared to the value of the consideration given up by the seller - otherwise the seller will not sell. On the other side of transaction, the offer is made by the acquirer reflecting how it perceives both parties; the value of obtaining and controlling interest in the target and the value of expected operating and financial synergies which could result

from combining the two firms (DePamphilis 2007). While the goal of the target's management is to ensure its firm's value is maximised, the acquirer's management will undertake actions to minimise the cost of capital of its forthcoming investment decision. The underlying assumptions of the reasoning in the following sections include the level of capital market efficiency in reflecting accounting information in securities prices and the managerial efficiency of acting on behalf of their principals.

The purpose of this section is to develop a relevant theoretical foundation for the proposed research hypotheses and provide an insight to understanding firms' motive to manage earnings upward in the case of M&A in particular.

3.3.1.1. The Value-Relevance of Accounting Earnings

It has been often reported in the literature, as asserted previously, periodic earnings that are reported in accounting reports are largely used by investors for valuation purposes (see, for example, Holthausen and Watts 2001; Hirshleifer et al. 2004). A good example of this is the common use of earnings in the "multiples of comparables"[26] approach in determining a firm's value for merger and acquisition purposes (Copeland et al. 2000; Arzac 2004; DePamphilis 2007; Gaughan 2007).

The association between earnings and value formed some of the early seminal empirical research in accounting. Subsequent work has extensively researched this relation from

[26] The *multiples* are normally calculated as a ratio of value to a normalising metric such as earnings, EBTDA or revenues. Therefore, valuation multiples include price-to-earnings, price-to-book, enterprise value to EBITDA or enterprise value to revenues. The multiples are estimated from peer firms, called *comparables*, which have characteristics comparable to the firm being valued (Arzac, 2004, p.63).

different perspectives and has predominantly followed the renowned work of the likes of Ball and Brown (1968), and Beaver (1968) as well as Fama's (1970; 1991) view of efficient markets. Empirical evidence indicates that a firm's share value is influenced by earnings suggesting that accounting earnings do provide information about a firm's ability to generate future cash flows (Sloan 1996; Xie 2001). Therefore, the value-relevance of earnings explains the managerial approach of exercising their discretion over the reported earnings (i.e. earnings management) whenever managers wish to influence their firm's value (Graham et al. 2005).

The empirical evidence obtained by Teoh et al. (1998) supports the notion that a firm adopts abnormally high income-increasing accounting procedures in order to have their share overpriced by the market.

The proposition of value-relevance of earnings does predict managerial concern concerning earnings due to its known connection with value. This proposition alone, however, does not predict how or when management have the motivation to use this relation.

3.3.1.2. Stewardship Theory

"*Stewardship theory defines situations in which managers are not motivated by individual goals, but rather are stewards whose motives are aligned with the objectives of their principals* (Davis et al. 1997, p.21)." In essence, this theory predicts that managers have the motive to practice earnings management to impact the value of their firms in line with the wealth maximisation objective of shareholders. Therefore, accounting earnings are not only used in equity valuation, but also in measuring managerial performance and how well the managers are acting in the interest of their shareholders (Dechow 1994).

In other words, if each of the acquirer and target's management team believed that pre-merger income-increasing earnings management maximises their respective *current* shareholders' gains from the deal, stewardship theory would predict that each management team has a motivation to do so prior to a M&A.

3.3.1.3. Agency Theory

Due to the separation of ownership and control in the firm, Jensen and Meckling (1976) develop a theory that predicts a general agency problem to exist in the context of various contractual relationships in the firm. Traditional agency problems are associated with the conflict of interests between management and outside equity and debt holders (Eisenhardt 1989).

Nonetheless, agency theory has also implications in situations involving *cooperative effort* by two or more parties where information is asymmetrically distributed between stakeholders and a conflict of interests exist (Jensen 1986; 2005).

In a corporate M&A context, agency problems between the shareholders of each the acquiring and the target firms explain the motivation of pre-merger earnings management at each side.

3.3.2. The Target's Side: the Timing Issue and the Lemons' Problem

The target's ability to manage its earnings preceding a M&A relies on when it learns about an acquiring firm's intention to take it over (Botsari and Meeks 2008). There is no standard timing of a target firm's awareness about an impending M&A. Jemison and Sitkin (1986, p.161) note that "*acquisitions are strategic, complex, [and] occur sporadically…*" Each deal

has peculiar circumstances with respect to the way in which the target becomes aware about being approached by a potential acquirer. This means that the revelation of a M&A deal of a particular target can vary between a mere surprise up to a strategic managerial decision planned years before the execution of a deal (Jemison and Sitkin 1986; Walsh 1989).

The deal's attitude, market rumours, and the managerial intuition (or intention) of their firm becoming a target are three general factors that can impact the timing that the target becomes aware it is being pursued. In terms of a deal's attitude, there are two main attitudes an acquirer can adopt in pursuing a target firm; either a friendly bidding process or through a hostile takeover (DePamphilis 2007).

In a friendly deal, an acquirer makes an initial contact with the target's management in order to negotiate the deal's term. A friendly M&A may be preceded by a long negotiation process. Jemison and Sitkin (1986, p.148) describe the negotiation process as a *courtship* that is required to make the *marriage* (the M&A) successful.

If the friendly M&A proposal was not successful and rejected by the target's management, the acquirer may decide to make an offer to the target's board of directors, which is often called a *bear hug* (Gaughan 2005). Alternatively, a common technique in a hostile takeover process is for the acquirer to make a tender offer, by which the acquiring firm makes offers directly to the shareholders of the target, bypassing its management and directors.

This does not necessarily mean that a target is completely unaware about its candidacy until it is approached by a bidder, be that approach friendly or hostile. The leakage of information and market rumours surrounding a M&A sometime before any official announcement can

effectively increase the target firm's awareness about the emerging deal. This can mean that the target becomes aware earlier than it should it simply wait for a direct or indirect contact by the potential acquirer. These phenomena are frequently documented by the literature and are empirically detected by reporting an abnormally high trading volume ahead of a significant price movement of the target's share (Gao and Oler 2008; Chou et al. 2011).

Another factor that can impact a target's awareness of its M&A candidacy is its managerial intuition and intention (Christie and Zimmerman 1994; Easterwood 1997; Meisel 2006). In other words, a firm's management may adopt a strategy by which it considers a merger with another entity as optimal for its firm and, correspondingly, it may directly seek to boost its M&A candidacy and attractiveness. Christie and Zimmerman (1994) argue that firms which become eventual targets may choose to adopt income increasing accounting procedures years before they engage in M&A.

Getting closer to the transaction itself, the managers of each party (i.e. the target and acquiring firms) have proprietary information on their own individual firms, i.e. the firms they are managing. However, information is imperfect for each party regarding the state and value of the other, which eventually creates a state of information asymmetry in the merger market between the two parties. The resultant effect of mergers under imperfect information for buyers and sellers creates a problem that Akerlof (1970) describes as the *lemons' problem*.

According to Akerlof's (1970) theory, an acquirer believes that a target accepts only the offer that is greater than its *real* value, which is only and perfectly known to the target firm itself. Given that the acquirer's management is imperfectly informed about the real value of the

sought target firm, the acquirer would consequently discount the value of target to avoid adverse selection assuming that the target is normally overpriced in the M&A market. Acquirers may not discriminate those targets which are fairly priced assuming all targets are *lemons*.

As a reaction to the anticipated lemons' problem, the target's management is motivated to make decisions - such as managing earnings and its share price upward - when it attempts to counteract the intuition of the acquirer and 'make–up' the discount that the acquirer applied on the target's value.

Hence, the first hypothesis in this study is formulated as follows:

> **Hypothesis 1**: *Target firms manage their earnings prior to the announcement date of a M&A deal.*

3.3.3. The Acquirer's Side: Payment Method, Window-Dressing and the Double Lemons' Problem

Firms' motives to merge and acquire other firms are numerous and the basic underlying motives include expansion and growth, tax avoidance and/or financial motives (Dunstan 1999; Gaughan 2007). It is sometimes difficult to establish what the real reasons for a merger truly were, since the stated reasons at the time may not reveal the full truth (Gaughan 2005). However, M&A activity is repeatedly justified by managers who argue that individual firms can efficiently generate greater benefits to their shareholders if they combine to create one larger entity, which is referred to as the creation of synergy (Koumanakos et al. 2005).

Therefore, making the M&A proposal seem attractive to the shareholders of both firms involved is another managerial concern.

Despite the real reasons behind a M&A deal, or indeed the post-merger consequences, when and how to use the firm's resources for a M&A remain among the most significant decisions made by top management. There are different financing options available for management to finance a M&A deal. The most commonly used methods are either to make a pure cash offer, to issue equity or to use a mixture of both equity and cash in an offer to target's shareholder (Hansen 1987).

Given that the market value of a share is influenced by earnings management, an acquirer's motivation to manage earnings differs depending on the use of equity in the payment structure (hereafter non-cash deals), according to Hansen's (Hansen 1987) theory of the management's choice of payment method. The target's shareholders are proposed to be concerned regarding the true value of the acquirer's share, only if they are offered an ownership interest (i.e. offered share issues in the payment structure) in the combined firm in exchange of their old shares. This is mainly due to the fact that target firm shareholders would then bear some of the equity risk as a result of the M&A.

Two theories are used in this study to predict pre-merger earnings management by non-cash acquirers, namely window-dressing and the double lemons' problem.

The term 'window-dressing', from an accounting perspective, refers to a broad range of techniques undertaken by a firm aimed at enhancing the financial position of the firm as perceived by users. This occurs through adjusting reports, financial ratios and disclosures to

look better (Dutta and Gigler 2002; Hillier et al. 2008). In a narrower view, window-dressing can also be directly associated with financial reporting practices that impact the earnings figure (Feltham and Xie 1994), since one of the incentives for window-dressing "*relates to perceptions of earnings figures as [a] key cognitive reference point in the eyes of financial statement users* (Guan et al. 2008, p.26)."

According to this view, it could be argued that a non-cash acquirer has a motivation to brighten up its reports by managing earnings upward before approaching a target firm, in order to seem more attractive and convincing to the target's shareholders to receive acceptance and successful completion of a M&A deal.

From a different theoretical perspective, as noted earlier, the participants in the M&A market have imperfect information regarding each other's firm. Each party expects the other to make rational decisions that maximise their own M&A gains. The acquirer's information uncertainty regarding the target's real value - the lemons' problem (as explained in detail in section 3.3.2) - causes the acquirer to discount the target's value avoiding potential adverse selection. A parallel scenario may occur on the target's side if it was offered equity issue in the payment structure. Hansen (1987) describes this situation as a *double lemons' problem*, suggesting that a target would suffer a similar information uncertainty regarding the acquirer's true value.

According to Hansen's (1987) theory, the choice over the exchange medium in M&A particularly the choice for an acquirer to use equity shares in a M&A, sends a signal to the target that the acquiring firm is overvalued. As a result, the target may discount the acquirer's share value in order to avoid potential adverse selection.

Given that managing earnings is not a costless option, Watts and Zimmerman (1990) commend the practice of earnings management if the anticipated cost of undoing earnings management exceeds the cost of doing it. Therefore, a non-cash acquirer has a motivation to manage earnings upwards to influence its share price before approaching a target in order to make up for the anticipated discount due to the double lemons' problem.

Given this scenario, pre-merger earnings management implies two incentives to the acquiring firm. The first is that the acquirer has an incentive to obtain capital at a lower cost so that the acquirer's management attempt to reduce the number of shares issued to the target and retain stronger control. The second incentive is to try to mitigate the post-merger diluting effect on the acquirer shareholders' rights of voting and profit sharing (i.e. their EPS) by minimising the number of shares that the acquirer is going to issue to the target's shareholders in the merger exchange (Erickson and Wang 1999).

Unlike target firms, acquirers do not only have the motivation to manage earnings, but they also have control over the timing element in initiating the M&A process, which enhances their efficiency in undertaking pre-merger earnings management (Erickson and Wang 1999; Koumanakos et al. 2005; Baik et al. 2007; Guo et al. 2008).

Hence, the non-cash acquirers are expected to manage earnings prior to a M&A deal and, therefore, the following hypothesis is proposed:

Hypothesis 2a: *Acquiring firms manage their earnings prior to the announcement date of a M&A deal if they offer equity shares in the deal.*

Correspondingly, cash acquirers do not have the obvious motivation to manage their earnings, which makes it a costly process that carries no economic return. Hence, *a priori* according to the theoretical framework of this study, it should be expected that no pre-merger earnings management by cash acquirers should be undertaken so that the following hypothesis holds:

Hypothesis 2b: *Acquiring firms do not manage their earnings prior to the announcement date of a pure cash M&A deal.*

3.3.4. The Sarbanes-Oxley: Purpose and Implications

3.3.4.1. The Purpose of SOX

As a reaction to the renowned reporting scandals in the US in 2001 and 2002, the Securities and Exchange Commission (hereafter SEC) along with other institutional regulators became concerned about reforms that could lead to a more reliable financial reporting environment, in which frauds and conflicts of interests are reduced and informational transparency is increased.

In the wake of calls for corporate legislation reform, a new public law officially entitled the *Public Company Accounting Reform and Investor Protection Act*, but commonly known as Sarbanes-Oxley Act of 2002 after the underwriters of the new law - Senator Paul Sarbanes and Representative Michael - was enacted by the US Congress. It became active on July 30, 2002 and was aimed at restoring investors' confidence and protecting stakeholders by enhancing the reliability and the accuracy of financial disclosure (SEC 2002).

The Act touches upon a range of urgent and contemporary issues that range from identifying the scope of the external auditor's practices, guidelines of general corporate governance

accountability in publicly held companies to relevant criminal penalties in case of noncompliance. SOX explicitly states the fines and imprisonment penalties for those corporate executives who violate the provisions outlined.

3.3.4.2. The Relevance of SOX

Among its eleven titles, Titles III and IV focus on corporate responsibility, emphasising the need for enhanced financial disclosures that may limit the practice of earnings management and the associated unfair presentation of corporate performance to external stakeholders.

Section 302 of SOX focuses on corporate responsibility in financial reporting in companies that are required to file periodic reports under sections 13(a) or 15(d) of the Securities Exchange Act of 1934. Section 302 requires management (represented by the CEO, the CFO or another person of similar responsibility) to certify in each quarterly (10Q form) or annual (10K form) report - which is prepared according to the Generally Accepted Accounting Principles (hereafter GAAP) - filed with the SEC that:

1- The management has reviewed the report;

2- The report does not contain any untrue statements of material facts or there are no omissions that may result in misleading financial statements;

3- The financial statements and other related disclosures in the report fairly present the financial position and results of the firm's operations for the designated period covered by the report;

4- The financial reports do not contain material misrepresentations;

5- The management has disclosed all material deficiencies related to internal controls, all frauds and all material changes in internal accounting controls (SEC 2002, p.777).

The SEC has also reconsidered its position regarding the term "fair presentation" of financial statements as noted in its explanation of Section 302 of SOX (SEC 2002, p.6) as follows:

> "…We have added a specific reference to cash flows even though Section 302 of the Act does not include such an explicit reference. We believe that it is consistent with Congressional intent to include both income or loss and cash flows within the concept of "fair presentation" of an issuer's results of operations.… We believe that Congress intended this statement to provide assurances that the financial information disclosed in a report, viewed in its entirety, meets a standard of overall material accuracy and completeness that is broader than financial reporting requirements under generally accepted accounting principles…"

The SEC explanation above, which is based on the substance and intent of SOX, exerts stronger pressure on preparers and auditors of financial statements in order to reduce attempts to manage earnings by emphasising the fair presentation and disclosure of accounting earnings as well as the respective cash flow component in contrast with accruals.

Section 401 of SOX focuses on improving the disclosures in periodic reports. It requires that annual and quarterly financial reports filed with the SEC must:

1- Reflect all material correcting adjustments to enhance accuracy;

2- Disclose all material off-balance sheet transactions, arrangements and obligations.

Moreover, Section 401 of SOX also regulates non-GAAP financial statements as it requires that public disclosures of pro-forma (i.e. non-GAAP) financial statements must be presented in

a manner that does not contain any untrue statement of a material fact while they must not omit a material fact necessary in order to ensure these reports are not misleading, in light of the circumstances under which they are presented (SEC 2002, p.785-6).

Section 404 of SOX requires that management must state its responsibility for:

1- Establishing and maintaining an adequate internal control structure and procedures for financial reporting;

2- Reporting their evaluation of the effectiveness of the internal control structure, which eventually needs to be attested by the firm's external auditor (SEC 2002, p.789).

McEnroe (2007) suggests that this aspect of SOX is created not only to combat fraudulent reports which result from the violation of GAAP, but also aim to eliminate misleading practices including earnings management through the application of GAAP.

Furthermore, amid the increased attention towards earnings management, SOX directed the SEC in Section 704 to review and analyse enforcement actions regarding violations of reporting requirements in order "*to identify areas of reporting that are most susceptible to fraud, inappropriate manipulation, or inappropriate earnings management*" (SEC 2002, p.799).

Correspondingly, the SEC issued a "*Report Pursuant to Section 704 of the Sarbanes-Oxley Act of 2002*" based on an earlier study which included all entities involved in the SEC's enforcement actions filed in the last five years preceding SOX enactment date. The report revealed that most enforcement matters are related to improper revenue and expense

recognition, including practices of inaccurate timing of revenue recognition, improper capitalization or deferral of expenses, incorrect use of reserves, and other understatements of expenses. Besides, the report indicated a number of enforcement matters associated with improper M&A related accounting practices such as improper valuation (SEC 2003).

Mark Jamrozinski, partner and co-chair of Deloitte's private equity practice, comments on the fashion of the focused due diligence which has evolved in the post-SOX era writing that "*M&A due diligence has evolved from the financial verifications and skeleton hunts of the past into a focused, integrated approach that proves valuable in assessing the thesis behind doing a transaction*." (Jamrozinski 2009, p.1)

Although M&A activity was not frankly dealt with in SOX, recent empirical evidence suggests that M&A has been greatly influenced since SOX. For example, Madura and Ngo (2010) find substantial evidence that M&A candidates tend to rely heavily on financial and legal advisors since SOX, which would consequently reduce the informational asymmetry between acquirers and targets. Furthermore, they explain that compliance with SOX leads to more due diligence and better governance.

The majority of chief audit executives also believe that SOX implementation has significantly improved internal controls over often-manipulated accounting areas[27], according to a survey by Rittenberg and Miller (2005) for the *Institute of Internal Auditors*. Besides, there is additional empirical evidence from Cohen et al.(2008), Zhou (2008) and Iliev (2010) that there

[27] The often-manipulated accounting areas in Rittenberg and Miller's (2005) study are defined based on the findings summary of the "*Report Pursuant to Section 704 of the Sarbanes-Oxley Act of 2002*" by SEC.

is a general (i.e. not event-specific) declining trend of documented abnormal accruals in financial statements in periods after SOX.

The overall theoretical reasoning, based on the purpose of SOX and previous empirical evidence, can establish the *a priori* suggesting that the implementation of SOX may enhance the containment of earnings management in a M&A context. Therefore, the following hypothesis can be formulated:

> **Hypothesis 3**: *The magnitude of pre-merger earnings management by firms engaged in M&A in post-SOX deals is significantly lower than those in pre-SOX period.*

This hypothesis can be broken down into two sub-hypotheses as follows:

> **Hypothesis 3a**: *The magnitude of pre-merger earnings management by target firms in post-SOX deals is significantly lower than those in pre-SOX period,*

and

> **Hypothesis 3b**: *The magnitude of pre-merger earnings management by acquirers in post-SOX deals is significantly lower than those in pre-SOX period.*

3.3.5. Summary of the Testable Hypotheses

According to the theoretical discussion above, this study attempts to assess five hypotheses by testing the below listed null hypotheses against them, given that (μ_{EM}) indicates the proxy of earnings management:

- H_{01}: $\mu_{EM\ (Targets)} = 0$
- H_{02a}: $\mu_{EM\ (Non\text{-}cash\ acquirers)} = 0$
- H_{02b}: $\mu_{EM\ (Cash\ acquirers)} \neq 0$
- H_{03a}: $\mu_{EM\ pre\text{-}SOX\ (Targets)} = \mu_{EM\ post\text{-}SOX\ (Targets)}$
- H_{03b}: $\mu_{EM\ pre\text{-}SOX\ (Non\text{-}cash\ acquirers)} = \mu_{EM\ post\text{-}SOX\ (Non\text{-}cash\ acquirers)}$

3.4. Research Methodology and Design

3.4.1. Earnings Management Proxy

Justifying earnings management motivation is theoretically reasonable around specific events. However, the design of the empirical measurement model for accrual-based earnings management has been a centre of debate in the literature (Healy and Wahlen 1999; Ronen and Yaari 2008).

Among the major challenges faced by researchers in earnings management is the difficulty of clearly identifying and measuring the portion of accruals arising from managerial discretion. Hettihewa and Wright (2010) argue that previous research is basically subjective and that empirical models being advocated based on judgment of the managerial intent and discretionary power with respect to accruals and other estimates affecting earnings. .

In financial reporting, which is guided by GAAP, reported earnings consist of two components; accrual component and cash accrual. Therefore, earnings management can, arguably, be either accrual-based or cash flow-based, which is often referred to "real earnings management" in the literature (see, for example, Xu et al. 2007; Cohen et al. 2008; Bartov and Cohen 2009).

Nonetheless, the accrual-based models of measuring earnings management have been exceedingly adopted in the literature, up to the point where the term "earnings management" per se, unless otherwise indicated, has become an implicit reference to the accrual-based type (see, for example, Schipper 1989; Teoh et al. 1998; Dechow et al. 2002; Lee et al. 2008; Grasso et al. 2009; Liu et al. 2010).

Hettihewa and Wright (2010) argue that the remarkable focus of research on accrual-based earnings management has two main causes. First, given that the principal product of GAAP is accruals, earnings are more likely to be managed on accrual rather than on the cash part of earnings, and second, because of the difficulties in clearly measuring the effect of different accounting policies; thus, if earnings management is considered to be an unobservable component of accruals, it is more likely that users will be unable to uncover the effect of earnings management on earnings.

In similar studies, in which earnings management is investigated around specific events such as management's buy-outs (hereafter MBO) (Perry and Williams 1994), seasoned equity offerings (hereafter SEO) (Rangan 1998), initial public offerings (hereafter IPO) (DuCharme et al. 2001) as well as M&As (Gong et al. 2008), a common research design in examining earnings management is followed by identifying events when firms have strong motivation to manage earnings, defining the 'normal' or expected pattern of accruals to set a control, and then reporting any abnormality of accruals to proxy for earnings management.

Unlike annual earnings-based studies (see, for example, Koumanakos et al. 2005; Botsari and Meeks 2008), this study follows Erickson and Wang (1999) and Gong et al. (2008) by using

interim reports. Investigating quarterly earnings can exploit the timing constraint on a firm's ability to manage earnings before a M&A, since examining the patterns of pre-event quarterly earnings provides an indication of potential managerial attempts to manipulate earnings (Jeter and Shivakumar 1999; Das et al. 2009).

Earnings management is examined for each of the acquirers and targets in each quarter for the last four quarters preceding the event of M&A - identified by the announcement date of the deal. Specifically, to identify the timing of earnings management decisions for a firm, abnormality in accruals is investigated in the quarterly earnings in quarters *j-1* to *j-4* from the announcement date of M&A, hereafter EM_{j-1}, EM_{j-2}, EM_{j-3} and EM_{j-4}, where j is the quarter in which the firm was announced as being involved in a M&A deal.

Interim reporting, in contrast with annual reports, allows firms to plan earnings management more efficiently. For instance, a firm's management may use its accrual reserves in doses over more than one quarter (Das et al. 2009). Hence, a cumulative approach is also employed for checking the robustness of the quarterly detected abnormal accruals. The cumulative abnormal accruals are calculated once for the most recent two quarters (i.e. taking *j-1* and *j-2*), three quarters and four quarters before the event, hereafter as *C2*, *C3* and *C4*, respectively, while EM_{j-1} equals *C1*.

3.4.2. The Metrics of Accruals' Normality

The current accruals are computed using the changes in the non-cash working capital, the balance sheet method[28] (Pungaliya and Vijh 2008) as follows:

$$CAC_i = \Delta CA_i - (\Delta CL_i - \Delta STD_i) - \Delta CASH_i \quad (3.1)$$

Where:

CAC: denotes the current accruals,

ΔCA: is the quarterly change in current assets (*Compustat* XPF mnemonic[29] code ACTQ),

ΔCL: is the quarterly change in current liabilities (mnemonic code LCTQ),

ΔCASH: is the quarterly change in cash (mnemonic code CHEQ),

ΔSTD: is the quarterly change in current maturities of long term debt and other short term liabilities included in current liabilities (mnemonic code DLCQ), and

[28] As a check for the method used in calculating the current accruals, the abnormal accruals are also calculated using the cash flow method for comparison, by which current accruals are calculated as $CACC_{i,j} = IBCQ_{i,j} - OANCFQ_{i,j} + DPCQ_{i,j}$, where $IBCQ_{i,j}$ is income before extraordinary items appeared in the statement of cash flow of firm *i* at quarter *j* and this is calculated using the *Compustat* year-to-date item of a mnemonic code *IBCY*, $OANCFQ_{i,j}$ is net cash flow from operating activities of firms *i* on quarter *j* but calculated using the year-to-date item of a mnemonic code *OANCFY* and $DPCQ_{i,j}$ is the depreciation and amortisation reported in the statement of cash flow of firm *i* on quarter *j* but calculated using the year-to-date item of a mnemonic code *DPCY*. The correlation coefficients are examined when relating abnormal accruals calculated using balance sheet method and cash flow method. *Pearson's* coefficients range from 0.237 to 0.555 while *Spearman's* coefficients range from 0.453 to 0.628 for both acquirers and targets. The coefficients found positive and very significant (P<0.00001) indicating additional robustness of the findings.

[29] In late 2007 *Compustat* switched to Xpressfeed delivery mechanism (XPF) using mnemonic coding to data items.

i: denotes the firm index which could be either an acquirer or a target.

A cross-sectional industry-performance-matched accruals model is used in this study, similar to the research design of Louis (2004) and Gong et al. (2008). As explained in Chapter 2 section 2.4.5, the core of this model emanates from the work of Dechow and Sloan's (1995) modified Jones' (1991) model after considering Kothari et al.'s (2005) non-linear control for performance.[30]

The industry-performance matching procedure is achieved in this model by building matching portfolios using the universe of firms in each quarter. More specifically, data of all firms available on *Compustat* is clustered by calendar years and quarters. In each quarter, all firms are categorised into industry sectors based on their 2-digit SIC. In each industry, all firms are ranked according to their performance - defined as ROA of same quarter last year - to form five quintiles.

Before ranking firms portfolios into quintiles, three procedures are followed for stronger robustness and to reduce measurement error at this stage (Gong et al. 2008); discarding the universe outliers represented by observations that have the highest and the lowest 0.1 percent ROA, dismissing each observation with the absolute value of current accruals divided by lagged total assets greater than one ($\left|CAC_j/TA_{j-4}\right| > 1$) to reduce the likelihood of including

[30] This study follows Kothari et al. (2005) recommendation of employing portfolio performance matching instead of adding a performance measure as a regressor to the accrual regression model for more reliable results.

observations with extreme values due to improper data entry in the database, and finally excluding portfolios with less than 20 observations.

The matching procedure leads to the creation of five performance-matched portfolios per industry per quarter for each year of data. Each portfolio of peer firms is used as a firm's control in order to estimate the parameters that are used in calculating the expected current accruals for each firm in the same portfolio.

Therefore, the following cross-sectional model is estimated for each portfolio constructed by the aforementioned procedure:

$$\frac{CAC_{i,j}}{TA_{i,j-4}} = \sum_{q=0}^{3} \lambda_{1+q} Q_{1+q,i,j} + \lambda_5 \left(\frac{[\Delta REV_{i,j} - \Delta AR_{i,j}]}{TA_{i,j-4}}\right) + \lambda_6 \left(\frac{CAC_{i,j-1}}{TA_{i,j-4}}\right) + \lambda_7 \left(\frac{PPE_{i,j}}{TA_{i,j-4}}\right) + \varepsilon_i \quad (3.2)$$

Where:

Q_q: is a dummy variable to control for seasonality, takes 1 if the deal is announced in quarter q prior to merger announcement and 0 if the otherwise,

ΔREV: is the quarterly change in sales (code REVTQ),

ΔAR: is the quarterly change in accounts receivables (RECTQ),

PPE: is the gross amount of property, plant and equipment in a quarter (PPENTQ),

TA_{j-4}: denotes the total assets in the same quarter last year (ATQ), and

ε: denotes the residual term of the regression model.

To reduce potential heteroskedasticity in residuals, all variables are scaled by the total assets in the same quarter last year as a deflating procedure, following the recommendation of Kothari et al. (2005).

3.4.3. The Test Procedure

In a particular quarter, the magnitude of a firm's abnormal accruals is determined as the difference between the firm's actual current accruals, as calculated by equation (3.1), and the estimated current accruals, as estimated by the respective set of portfolio-matched parameters of the model in equation (3.2).

A zero difference indicates that a firm's current accruals in that particular quarter is as expected (i.e. normal) and no earnings management is detected. However, a positive difference indicates that the firm's actual accruals are greater than expected (i.e. abnormal) and that upward earnings management is detected, while a negative difference indicates the opposite.

Some studies in the literature, especially those which focus on the quality or the smoothness of accruals rather than the direction of accruals manipulation, define earnings management as the unsigned value of abnormal accruals (see, for example, Zhou 2008). In fact, obtaining the unsigned magnitude of earnings management may be useful for studies in which the sign of earnings management is meaningless, or for those that do not predict a specific direction of the

abnormal accruals, most likely due to the lack of managerial motivation[31]. Nonetheless, this is not the case of this study since the sign of abnormal accruals is as important as the magnitude when interpreting the results and, hence, the sign of abnormal accruals is not neutralised.

The sample employed in this study is taken from a period during which a major change in the active laws has occurred, leaving a debate about the consequences. Therefore, the hypotheses of this study are constructed and tested using two-tailed test instead of one-tailed test. This procedure does not only reduce the risk of making *Type I* error, but also opens a chance of detecting unanticipated significant differences in both directions, i.e. the positive and the negative tails (Black 1999). The null hypotheses are assessed using a parametric (*t*-test) as well as a non-parametric (*Wilcoxon-Z*) test for checking robustness.

3.4.4. Sampling and Data

3.4.4.1. Sample Construction

The research design of this study aims at employing a structured sample of firms that are believed to have the incentive to manage their earnings. To achieve this objective, a number of selection criteria are adopted for selecting the M&A deals that are included in the sample. The

[31] For example, DeAngelo (1986) did not take the absolute value of abnormal accrual in her study "*Accounting Numbers as Market Valuation Substitutes: A Study of Management Buyouts of Public Stockholders*" in the *Accounting Review* (61), because she was hypothesised a downward earnings management before management buyouts. Similarly, Teoh et al. (1998) expected an upward earnings management before seasoned equity offerings in their study "*Earnings management and the underperformance of seasoned equity offerings*" in the *Journal of Financial Economics* (50) and, accordingly, they did not consider the absolute abnormal accruals.

sample includes completed M&A deals that were announced in the ten year period (from 01/01/1999 to 31/12/2008)[32] and obtained according to the following criteria:

1. M&A deals are completed between US acquirers and domestic targets. Excluding multi-national M&A deals is necessary to avoid the differences in the institutional settings and reporting standards (Erel et al. 2011);

2. Acquirers and targets must be publicly listed companies for two reasons: to guarantee that both acquirers and targets were subject to SOX provisions in post-SOX period and to mitigate the differences in the level of information asymmetry between the acquirer and the target;[33]

3. Deals in which any acquirers or targets in the financial sector (SIC code between 6000-6999) are excluded. This is a common practice in the literature since the financial sector is subject to special regulations (see, for example, Erickson and Wang 1999; Gong et al. 2008);

4. The deal value should be greater than or equal to $1 million to exclude all deals of negligible sizes, in which the economic incentive to manage earnings is less likely (Erickson and Wang 1999);

[32] The sampling period cut-off point (31/12/2008) is determined once data collection for this study started in the beginning of 2009. The ten years period is chosen an ad hoc sampling period to include observations before and after SOX.

[33] Baik et al. (2007) recommends that the estimation risk in the valuation of a private target is higher than that of a public target. Thus, this may motivate the acquirer to apply much more aggressive accounting in manipulating earnings prior to acquiring a private target, in an attempt to avoid overpayment.

5. A controlling ownership interest must be acquired in the deal (i.e. the acquirer owned less than 50 percent before the transaction and greater than 50 percent by completing the deal).

The final sample consists of 704 M&A deals making 1,408 firm observations of acquirers and targets that comply with the sampling procedure and have available data (see Section 3.4.4.2). A detailed track on the sampling procedure is illustrated in Table 3.1.

3.4.4.2. Data Sources

Two main sources are used to obtain data for this study; *Thomson ONE Banker* and *Compustat*. *Thomson ONE Banker*[34] is a financial product offered by *Thomson Reuters* and its data is derived from sources including *SDC Platinum*, *Edgar filings*, *I/B/E/S* and *Worldscope*.

Thomson ONE Banker is used for sampling and to obtain deal related data. However, earnings management and other quarterly accounting data are available on *Compustat North America Fundamental Quarterly* dataset by *Wharton Research Data Service* (WRDS).[35]

Since data items for acquirers and targets are obtained from two different sources, a common identifier is needed to merge the datasets together. *CUSIP Master File* on WRDS is used to convert the 6-character CUSIP available for firms on *Thomson ONE Banker* into 8-character CUSIP in order to match with the firms' codes on *Compustat*.

[34] http://banker.thomsonib.com

[35] https://wrds-web.wharton.upenn.edu/wrds/

Table 3.1 Sample selection criteria

The following table presents the sampling criteria. *Thomson ONE Banker* database is used for selecting the M&A deals before excluding those ones, whose the acquirer and the target's common identifiers were not found on *CUSIP Master File* to match them on *Compustat*.

Criteria	Operator	Description	Count
Acquirer / Target nations	*Include*	US	205,661
Date announced	*Between*	01/01/1999 to 12/31/2008	91,249
Deal status	*Include*	Completed	70,018
Acquirer / Target listing status	*Include*	Public	4,273
Acquirer / Target SIC	*Exclude*	Financial sector (SIC 60-69)	2,508
Deal value	*Between*	$1 million to HI	2,296
% shares owned prior	*Between*	0 to 50%	2,230
% shares owned after transaction	*Between*	50% to 100%	1,421
Firm's identifier mismatch	*Exclude*	8-CUSIP	704

The final sample, consisting of 704 deals, makes 1,408 firm observations (i.e. acquirers and targets) and a total of 5,632 firm-quarter observations.

To meet the data requirement of the methodology in this study, as illustrated in section 3.4.1, quarterly accounting data items are downloaded for the universe of firms available on *Compustat* for the years 1997 to 2008, which result in 212,447 firm-quarter observations clustered in 3,445 industry-performance matched portfolios for all calendar quarters for the period.

3.5. Results

The obtained results in this study are discussed and organised in three subsections. After reporting the descriptive statistics related to each of the acquiring firms, target firms and the completed deals are shown in 3.5.1, the output of assessing the acquirers-related hypotheses is

discussed in 3.5.2 while the findings concerning the target related hypotheses are discussed in 3.5.3.

3.5.1. Descriptive Statistics

Table 3.2 demonstrates the characteristics of the sample comprising of 704 deals. The total sample is roughly evenly distributed into 378 pre-SOX deals and 326 post-SOX deals, 53.7 percent and 46.3 percent respectively. A control group is formed of the pre-SOX deals and matched to a subsample of post-SOX deals for testing the third hypothesis, which compares earnings management in both eras.

In Panel A of Table 3.2, the sample distribution by year shows that many merger deals in the US clustered in 2000 with 180 deals being completed in the sample, whereas 2008 provides the lowest number of deals in the sample with only 33 M&A deals meeting the aforementioned selection criteria. Panel B of Table 3.2 reveals that of the overall sample, 268 deals (38.1 percent) were financed purely by cash, while the remaining 436 deals (61.9 percent) were financed fully or partially by equity issues.

The distribution of deals per industry of acquirer and target as shown in Panel D of Table 3.2 depicts the distribution of the sample across a total range of 40 sectors. This was achieved through matching the 33 acquiring firms' sectors with 38 target firms' sectors. Sectors that are highly represented in the sample are chemicals (SIC 28), electronics (SIC 36), instruments (SIC 38) and business services (SIC 73). Collectively, these sectors account for the deals of 405 acquirers (57.6 percent) and 403 targets (55.2 percent).

Table 3.2 Sample distribution

The following table presents the distribution of the overall sample of M&A deals by year in which the deal was announced in Panel A, the distribution of the sample by pre and post-SOX and by method of payment in Panel B, the distribution of the sample by the relatedness of the target's and the acquirer's industry (i.e. matched 2-digit SIC codes) in Panel C, and how the sample is distributed on industry sectors of the acquirers and the targets of the deals.

Panel A: Deals distribution by year

	Freq.	*%*
1999	83	11.79
2000	130	18.47
2001	102	14.49
2002	63	8.95
2003	62	8.81
2004	59	8.38
2005	64	9.09
2006	53	7.53
2007	55	7.81
2008	33	4.69
Total	704	100.00

Panel B: Deals distribution by payment method

	Total		Pre-SOX		Post-SOX	
	Freq.	*%*	*Freq.*	*%*	*Freq.*	*%*
Pure cash	268	38.1	123	32.5	145	44.5
Non-cash	436	61.9	255	67.5	181	55.5
Total	704	100.0	378	100.0	326	100.0

Panel C: Deals distribution by target relatedness to acquirer

	Total		Pre-SOX		Post-SOX	
	Freq.	*%*	*Freq.*	*%*	*Freq.*	*%*
Related	457	64.9	240	63.5	217	66.6
Unrelated	247	35.1	138	36.5	109	33.4
Total	704	100.0	378	100.0	326	100.0

Panel D: Sample distribution by acquirer and target industry

		Acquirers		Targets	
SIC	Industry	*Freq.*	*%*	*Freq.*	*%*
10	Metal mining	5	0.71	5	0.71
13	Oil & gas extraction	43	6.11	40	5.68
15	General building contractors	0	0.00	1	0.14
17	Special trade contractors	0	0.00	2	0.28
20	Food & kindred products	17	2.41	18	2.56
21	Tobacco products	1	0.14	1	0.14
23	Apparel & other textile products	0	0.00	2	0.28
25	Furniture & fixtures	1	0.14	0	0.00
26	Paper & allied products	1	0.14	3	0.43
27	Printing & publishing	3	0.43	2	0.28
28	Chemicals & allied products	81	11.51	67	9.52
29	Petroleum & coal products	0	0.00	2	0.28
30	Rubber & misc. Plastics products	1	0.14	2	0.28
32	Stone, clay & glass products	1	0.14	1	0.14
33	Primary metal industries	10	1.42	7	0.99
34	Fabricated metal products	7	0.99	6	0.85

Cont'd Table 3.2

35	Industrial machinery & equipment	60	8.52	55	7.81
36	Electronic & other electric equipment	87	12.36	86	12.22
37	Transportation equipment	11	1.56	9	1.28
38	Instruments & related products	74	10.51	70	9.94
39	Misc. manufacturing industries	1	0.14	3	0.43
42	Trucking and warehousing	3	0.43	3	0.43
47	Transportation services	0	0.00	2	0.28
48	Communications	47	6.68	38	5.40
49	Electric, gas & sanitary services	24	3.41	22	3.13
50	Wholesale trade-durable goods	8	1.14	9	1.28
51	Wholesale trade-nondurable goods	4	0.57	2	0.28
54	Food stores	1	0.14	1	0.14
58	Eating & drinking places	1	0.14	1	0.14
59	Miscellaneous retail	13	1.85	16	2.13
70	Hotels & other lodging places	2	0.28	3	0.43
73	Business services	163	23.15	180	25.57
76	Miscellaneous repair services	0	0.00	1	0.14
78	Motion pictures	3	0.43	3	0.43
79	Amusement & recreation services	4	0.57	4	0.57
80	Health services	10	1.42	13	1.85
82	Educational services	0	0.00	1	0.14
87	Engineering & management services	16	2.27	22	3.13
92	Justice, public order & safety	0	0.00	1	0.14
97	National security & international affairs	1	0.14	0	0.00
Total		704	100.00	704	100.00

Moreover, there are 457 deals (64.9 percent) which completed between acquiring and target firms which share the same sector (i.e. the 2-digit SIC matches for both acquirer and its target) as summarised in Panel C of Table 3.2. It is worth mentioning that 75 percent of acquirers in the sample have had ownership interest in their targets prior to disclosing the M&A deal announcement [36].

[36] In these cases, the ownership interest has not exceeded 50 percent prior to the M&A deal.

Table 3.3 presents a comparison between the two parties of each M&A deal while also providing descriptive statistics on the deal itself. Furthermore, it also compares the firms and their deals' characteristics pre- and post-SOX.

Examination of the acquirers as presented in Panel A of Table 3.3, shows that the sample mean (standard deviation) book value of the total assets of the acquiring firms of those deals announced prior to SOX is $7.86 billion ($2.3 billion) compared to $8.84 billion ($2.1 billion) post-SOX with an average (standard deviation) of $8.31 ($2.18 billion) for the overall sample. The pre-SOX subsample profitability (ROA) is lower in mean (-7.8 percent) but higher in standard deviation (97.3 percent) compared to the post-SOX subsample (0.15 percent mean with 22.18 percent of standard deviation).

However, comparing the ROA median value in pre- (3.9 percent) with post-SOX (4.9 percent) does not indicate a high variation as the median is less sensitive to extreme values of acquirers' ROA. The aggregate sample of acquirers seems more homogeneous in terms of leverage as the mean (standard deviation) debt ratio in pre- and post-SOX is 43.32 percent (22.5 percent) and 45.36 percent (25.1 percent) respectively with roughly a similar median of 43.5 percent in both subsamples.

Panel B of Table 3.3 provides a closer look at the descriptive statistics of non-cash acquirers. The mean (standard deviation) size for these firms shows they have a value of $8.88 billion ($3.7 billion) for the pre-SOX subsample. This is higher and shows a greater dispersion when compared to post-SOX subsample's mean (standard deviation) of $5.34 billion ($1.80 billion). The ROA of the non-cash acquirers is again highly dispersed for the total sample (2.7 percent

mean with 91.3 percent standard deviation) as well as for both subsamples pre (-15.65 percent mean with 122 percent standard deviation) and post-SOX (-5.2 percent mean with 27.3 percent standard deviation) due to both a variation and the existence of extreme values in profitability.

Therefore, the median value of ROA seems more meaningful for comparing since it has the values of 2.7 percent, 2.1 percent and 3.1 percent for the total sample, pre-SOX and post-SOX subsamples, respectively.

Table 3.3 Sample descriptive statistics

This table presents the descriptive statistics of the study sample. The descriptive statistics are organised in four panels. The earnings management proxies *EM j-1, EM j-2, C2, EM j-3, C3, EM j-4* and *C4* are in percent. *Size* is the book value of total assets in millions of US dollars. *Profitability* is the return on assets. *Leverage* denotes the debt ratio. *Deal value* in million US dollars. *Premium* is the percent excess of the offered price over the target's share market value four weeks preceding the deal's announcement date. *Relative sales size* is the acquirer's sales to the target's sales in the last 12 months before the acquisition. *Offer to target EPS* is the percentage of price offered to target shareholders per share divided by target's EPS.

Panel A: Descriptive statistics of the overall acquirers

	Total (N=704)			Pre-SOX (N=378)			Post-SOX (N=326)		
	Mean	*Median*	*STD*	*Mean*	*Median*	*STD*	*Mean*	*Median*	*STD*
EM_{j-1}	0.3224	0.0578	5.0702	0.3021	0.2482	5.0265	0.3483	-0.1788	5.1353
EM_{j-2}	0.3952	0.0526	4.6661	0.2840	0.3263	5.3167	0.5114	-0.0464	3.8777
C2	0.6480	0.1115	6.7614	0.4894	0.1272	7.2631	0.8112	0.1115	6.2140
EM_{j-3}	0.1772	0.0563	5.1275	-0.1832	0.0273	5.6658	0.4869	0.0564	4.6038
C3	0.8589	0.1133	8.2218	0.2437	0.0620	9.1300	1.4107	0.1948	7.2880
EM_{j-4}	-0.2247	-0.0240	6.0134	-0.3541	0.3920	6.5623	-0.1283	-0.3390	5.5805
C4	0.8270	-0.1459	10.7007	0.1154	-0.0804	11.4741	1.4038	-0.2255	10.0190
Size	8313.1	1342.8	21824.7	7857.6	1287.9	22956.1	8834.8	1466.6	20476.1
Profitability	-0.0409	0.0459	0.7272	-0.0780	0.0387	0.9726	0.0015	0.0488	0.2218
Leverage	0.4428	0.4360	0.2377	0.4332	0.4350	0.2249	0.4536	0.4370	0.2514

Panel B: Descriptive statistics of non-cash acquirers

	Total (N=436)			Pre-SOX (N=255)			Post-SOX (N=181)		
	Mean	*Median*	*STD*	*Mean*	*Median*	*STD*	*Mean*	*Median*	*STD*
EM_{j-1}	0.4191	0.0625	5.3525	0.3010	0.2548	5.2507	0.5880	-0.1694	5.7415
EM_{j-2}	0.5163	0.2465	5.1132	0.3668	0.7031	6.1100	0.6982	-0.0951	4.0162
C2	0.8168	0.4037	7.1384	0.4953	0.7654	7.7450	1.1966	0.4037	6.7150
EM_{j-3}	0.2448	0.1067	5.7796	-0.2863	0.0008	6.5649	0.7725	0.1600	5.0623
C3	1.0886	0.6739	9.0072	0.2146	0.6740	10.1737	1.9447	0.8200	7.9779
EM_{j-4}	-0.4911	0.0061	6.6060	-0.6723	0.4054	7.8413	-0.3430	-0.0406	5.5671
C4	0.7421	-0.1154	11.5098	-0.2436	0.4859	12.9965	1.5960	-0.0832	10.2098
Size	6629.1	897.2	22055.3	8876.3	903.6	37035.0	5335.7	719.6	17959.5
Profitability	-0.1053	0.0269	0.9132	-0.1565	0.0210	1.2177	-0.0524	0.0309	0.2728
Leverage	0.4404	0.4060	0.2646	0.4005	0.3765	0.2302	0.4755	0.4240	0.3050

Cont'd Table 3.3

Panel C: Descriptive statistics of targets

	Total (N=704)			Pre-SOX (N=378)			Post-SOX (N=326)		
	Mean	*Median*	*STD*	*Mean*	*Median*	*STD*	*Mean*	*Median*	*STD*
EM_{j-1}	0.0049	-0.0002	5.8626	-0.7323	-0.5171	5.9775	0.8222	0.7033	5.6383
EM_{j-2}	-0.2253	-0.0944	6.8639	-0.5066	-0.1043	7.1949	0.0660	-0.0767	6.5120
C2	-0.1105	-0.1947	6.9509	-1.1079	-0.5790	7.2552	0.9174	0.5408	6.4856
EM_{j-3}	0.0504	0.1711	6.0495	-0.1813	0.1184	4.5984	0.2659	0.3038	7.1470
C3	-0.0793	-0.2541	8.2141	-1.2845	-1.3263	7.9559	1.0804	0.8324	8.3159
EM_{j-4}	0.8193	0.3830	6.2526	1.2252	0.4519	7.9586	0.4853	0.3678	4.3758
C4	0.9010	0.8689	10.297	0.2241	0.2058	11.8308	1.4709	1.6972	8.7999
Size	938.6	115.6	3424.7	858.5	101.4	2931.2	1033.6	136.4	3934.0
Profitability	-0.4371	0.0015	4.8994	-0.5860	-0.0227	6.4075	-0.2597	0.0155	1.9242
Leverage	1.8258	0.4270	33.640	2.8850	0.4220	45.5764	0.5589	0.4270	0.8424

Panel D: Descriptive statistics of deals

	Total (N=704)			Pre-SOX (N=378)			Post-SOX (N=326)		
	Mean	*Median*	*STD*	*Mean*	*Median*	*STD*	*Mean*	*Median*	*STD*
Deal value	1566.9	234.6	5531.3	1407.4	212.4	5060.3	1752.0	270.1	6034.1
Premium	49.47	34.46	101.03	56.12	42.26	129.47	41.65	30.17	49.01
Relative sales size	97.60	5.870	428.19	90.94	6.370	296.39	105.47	5.170	544.74
Offer to target EPS	91.75	29.01	346.49	71.69	26.29	161.93	110.06	30.14	453.47

From Panel C in Table 3.3, the targets' mean size for the total sample is $0.94 billion with a standard deviation of $3.43 billion. The post-SOX subsample of targets has a slightly larger mean size of $1.03 billion compared to the pre-SOX subsample's of $0.86 billion. Targets' profitability is, unsurprisingly, highly dispersed. For example, the total sample has a mean ROA of -43.7 percent with a 489.9 percent standard deviation. Thus, the median provides a better central tendency measure, which shows 0.15 percent, -2.2 percent and 1.6 percent for the total sample of targets, pre-SOX and post-SOX subsamples respectively. The median debt ratio is roughly consistent (around 42.7 percent) for the aforementioned three groupings.

When conducting a general comparison of the acquirers with the targets, it can be noticed that acquirers on average are much bigger in size, higher in profitability and slightly more leveraged than their targets. Therefore, it is not unusual that the mean (median) value of acquirer sales to target sales is 97.6 times (5.9 times) bigger, as shown in Panel D Table 3.3. The descriptive statistics of deals in the same panel also reveals that the mean (median) deal value is $1.57 billion ($234.6 million) with the mean (median) acquisition premium of 49.5 percent (34.5 percent) and the mean (median) offer per share to target EPS being 91.75 times (29 times).

3.5.2. Earnings Management on the Acquirer's Side

3.5.2.1. Analysing the aggregate sample

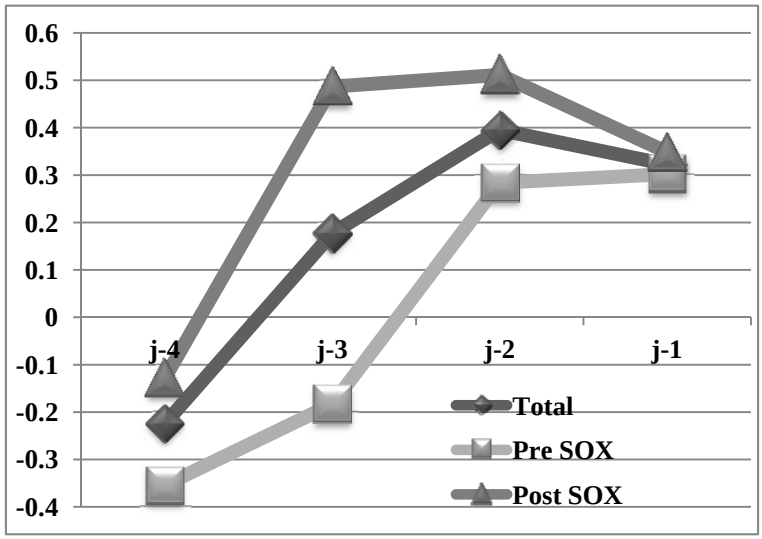
Some studies in the literature, such as Koumanakos et al. (2005), examine earnings management in samples of acquirers without applying any treatment regarding the method of payment in their designs. However, the theoretical framework in this study considers the

method of payment during the formation of the hypotheses related to acquirers as shown earlier in section 3.3.

Although the acquirer-related hypotheses are split based on whether shares are used in the deal's payment structure, this study also provides a comparison of earnings management results in total by taking all 704 acquirers without stratifying them by the method of payment (the "aggregate" sample hereafter) and another following stratification (the "segregate" samples hereafter), where there are 436 non-cash acquirers and 268 pure cash acquirers, each in their own sample for further analysis.

Figure 3.1 Acquirers' abnormal accruals prior to M&A

The following figure depicts the mean abnormal accruals percent detected in the quarterly earnings of the overall sample of acquirers (N=704) as well as the pre and post-SOX subsamples (N=378 and 326, respectively) over the last four fiscal quarters prior to the M&A announcement. *j* denotes the fiscal quarter in which the M&A deal is announced.



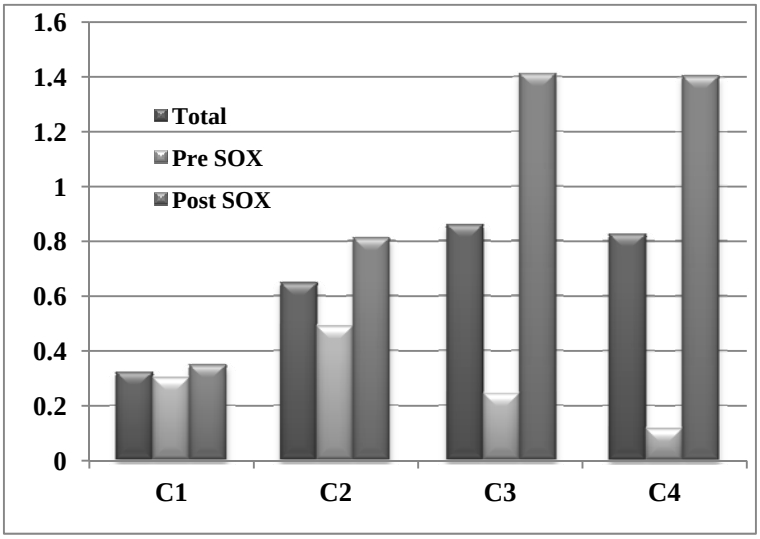
The abnormal accruals in the overall sample of acquirers show an increasing trend over the four quarters prior to the M&A announcement, hitting a peak in the second pre-merger quarter (*j-2*) as illustrated in Figure 3.1. The results for the aggregate sample of acquirers in Panel A

of Table 3.3 shows that EM_{j-2} has the highest mean (0.3952) and the lowest standard deviation (4.666), while EM_{j-4} has the lowest mean of abnormal accruals (-0.2247) with the highest standard deviation (6.013).

When the acquirers' sample is separated into pre- and post-SOX subsamples, the mean

Figure 3.2 Acquirers' cumulative abnormal accruals prior to M&A

The following figure depicts the mean cumulative abnormal accruals percentage in the last four fiscal quarters prior to the M&A announcement for the overall sample of acquirers (N=704) as well as the pre and post-SOX subsamples (N=378 and 326, respectively). *C1* denotes abnormal accruals in quarter *j-1*, *C2* denotes the cumulative abnormal accruals in the quarters *j-1* and *j-2*, *C3* denotes the cumulative abnormal accruals in the quarters *j-1* to *j-3* and *C4* denotes the cumulative abnormal accruals in quarters *j-1* to *j-4*. *j* denotes the fiscal quarter in which the M&A deal is announced.



abnormal accruals in all four quarters prior to the M&A seems to be much higher in the post-SOX period when compared to the pre-SOX period in Figure 3.1.

Furthermore, Figure 3.1 also indicates that acquirers used to aggressively inflate their abnormal accruals in quarter *j-2* in the pre-SOX era, while in the post-SOX time acquirers seem to consider earnings management earlier than before, up to three quarters prior to announcing the M&A itself. Although acquirers' mean abnormal accruals could exert negative

values especially in the earlier quarters prior to a M&A, the acquirers' mean cumulative abnormal accruals up to four quarters have always had positive values in the sample as depicted in Figure 3.2. However, the mean cumulative abnormal accruals over the past four quarters prior to a M&A (*C4*) in the post-SOX era has a much higher value when compared to pre-SOX times which are (1.4038) and (0.1154) respectively.

This result is no exception since the magnitude of earnings management reported for most proxies in this study is greater in the post-SOX era.

Table 3.4 One-sample test of the acquirers' earnings management

The following table presents mean and median abnormal accruals percentages for the overall acquirers over the last four fiscal quarters preceding the deal's announcement date. The table demonstrates the results of t-test and Wilcoxon-Z test in parentheses. The one-sample tests were applied for mean and median values, respectively, for assessing H_0:$\mu_{EM}=0$. The results are shown for the overall sample of acquirers and for each subsample by pre and post-SOX. The symbols (*), (**) and (***) denote confidence interval of 10, 5 and 1 percent, respectively, in two-tailed test.

Earnings management proxies	Total (N=704)		Pre SOX (N=378)		Post SOX (N=326)	
	Mean *(t-value)*	Median *(Wilcoxon-Z)*	Mean *(t-value)*	Median *(Wilcoxon-Z)*	Mean *(t-value)*	Median *(Wilcoxon-Z)*
EM_{j-1}	0.3224 *(1.53)*	0.0578 *(0.97)*	0.3021 *(1.08)*	0.2482 * *(-1.66)*	0.3483 *(1.08)*	-0.1788 *(-0.50)*
EM_{j-2}	0.3952** *(1.96)*	0.0526 * *(1.77)*	0.2840 *(0.89)*	0.3263 *(-1.31)*	0.5114** *(2.14)*	-0.0464 *(-1.06)*
C2	0.6480** *(2.11)*	0.1115 *(1.04)*	0.4894 *(1.06)*	0.1272 *(-0.72)*	0.8112** *(2.02)*	0.1115 *(-0.65)*
EM_{j-3}	0.1772 *(0.76)*	0.0563 *(0.78)*	-0.1832 *(-0.49)*	0.0273 *(-0.11)*	0.4869 * *(1.72)*	0.0564 *(-1.17)*
C3	0.8589 ** *(2.20)*	0.1133 * *(1.91)*	0.2437 *(0.39)*	0.0620 *(-1.00)*	1.4107*** *(2.95)*	0.1948* *(-1.67)*
EM_{j-4}	-0.2247 *(-0.79)*	-0.0240 *(-0.18)*	-0.3541 *(-0.75)*	0.3920 *(-1.00)*	-0.1283 *(-0.37)*	-0.3390 *(-0.85)*
C4	0.8270 *(1.57)*	-0.1459 *(-1.51)*	0.1154 *(0.14)*	-0.0804 *(-1.19)*	1.4038** *(2.11)*	-0.2255 *(-0.95)*

Table 3.4 reports the *t-values* and *Wilcoxon Z-values* of all earnings management proxies for the overall sample of acquirers. The t-values of the mean abnormal accruals in the second quarter (*j-2*) for the total sample (0.395), as well as for the post-SOX sample (0.511), indicate significant earnings management at a 5 percent confidence interval whereas there is no significant evidence of abnormal accruals found in the pre-SOX subsample. EM_{j-3} is not significant at the total sample level.

Table 3.5 Two-sample test of earnings management differences for the acquirers by SOX

The following table presents mean and median abnormal accruals percentages for overall acquirers over the last four fiscal quarters preceding the deal's announcement date. The table demonstrates the results of t-test and Wilcoxon-Z test in parentheses. The two-sample tests were applied for mean and median values, respectively, for assessing H_0: $\mu_{EM\ (pre\text{-}SOX)} = \mu_{EM\ (post\text{-}SOX)}$. The results are shown for the overall sample of acquirers and for each subsample by pre and post-SOX. The symbols (*), (**) and (***) denote confidence interval of 10, 5 and 1 percent, respectively, in two-tailed test.

Earnings management proxies	Pre-SOX (N=378) Mean (Median)	Post-SOX (N=326) Mean (Median)	Difference *(Post – Pre)* Mean (Median)	*t-value*	*Wilcoxon-Z*
EM_{j-1}	0.3021(0.3022)	0.3483(-0.1788)	0.0462(-0.481)	*0.10*	*1.48*
EM_{j-2}	0.2840(0.3263)	0.5114(-0.0464)	0.2274(-0.3727)	*0.56*	*0.21*
C2	0.4894(0.1273)	0.8112 (0.1115)	0.3218(-0.0158)	*0.52*	*0.19*
EM_{j-3}	0.1830(0.0273)	0.4869 (0.0564)	0.3039(0.0291)	*1.44*	*0.84*
C3	0.2437(0.0620)	1.4107 (0.1948)	1.1670(0.1328)	*1.47*	*0.46*
EM_{j-4}	-0.354 (0.3920)	-0.128 (-0.3390)	0.2260(-0.7310)	*0.39*	*-1.33*
C4	0.1154(-0.0804)	1.4038(-0.2255)	1.2884(-0.1451)	*1.21*	*-0.03*

It only shows a significant mean of 0.4869 at the 10 percent confidence interval for the post-SOX sample. This gives support to the earlier discussion that managers' attitude toward earnings management has shifted in the post-SOX era as they do not wait until *j-2* to start working out their reported earnings but rather they start inflating the accruals one quarter

earlier (i.e. since *j-3*). Moreover, the mean cumulative abnormal accruals *C2* are significant at the 5 percent confidence interval for both the total sample and the post-SOX sample.

The analysis for *C3* indicates further evidence in support of early earnings management during the current post-SOX period. Even though the total sample mean (0.8589) of *C3* is statistically significant at the 5 percent confidence interval, there is no evidence found in support of this proxy for the pre-SOX sample, while the post-SOX sample mean of *C3* (1.4107) is very significant with a significantly positive median (0.1948) at the 10 percent level in the *Wilcoxon-Z* test. Interestingly, even the cumulative abnormal accruals proxy *C4* has a significant positive mean value (1.4038) in the post-SOX subsample.

Table 3.5 shows that the two-sample mean differentials (i.e. post-SOX minus pre-SOX values) are positive since all earnings management proxies show a higher abnormal accruals mean for the post-SOX subsample. Despite the fact that the output of two-tailed tests does not reveal sufficient statistical significance to conclude that these mean values are significantly different from zero, there is little evidence at the 10 percent confidence interval that can be found on the positive tail (i.e. right tail) to suggest that EM_{j-3} and *C3* are higher in the post-SOX time even if a one-tailed *t-test* was performed.

3.5.2.2. Analysing the segregated samples by the method of payment

As noted by Erickson and Wang (1999), the acquirers' motives regarding earning management vary considerably with the method of payment used. Cash acquirers lack the economic incentive to manipulate pre-merger earnings unlike those acquirers which finance the M&A deal using their own equity shares. Consistent with this argument, the acquirers' sample has

been broken down based on the payment method offered to the target firm. Figure 3.3 illustrates the acquirers' mean abnormal accruals behaviour pre- and post-SOX after separating the acquirers sample into pure cash versus non-cash acquirers.

By comparing Figure 3.3 with the previous graph of the overall sample in Figure 3.1, it can be seen that the same trend of earnings management patterns as described earlier for the overall sample holds only for firms which use equity in their payment method (i.e. non-cash acquirers), as shown in graph B of Figure 3.3. Non-cash acquirers in the post-SOX sample seem to begin managing their earnings early, starting in quarter *j-3* reaching the maximum mean of 0.7725, while pre-SOX non-cash acquirers maximise their abnormal accruals in quarter *j-2* with a maximum mean of only 0.3668. Conversely, this does not ring true for pure cash acquirers as their pre-merger abnormal accruals curve in graph A of Figure 3.3.

The graphical depiction does not show any noticeable sharp move which infers that cash acquirers seem not to worry that much about managing their earnings in any period prior to announcing a M&A deal. Furthermore, the levels of cumulative abnormal accruals are also higher for non-cash acquirers in general, and for those relating to the post-SOX era in particular (see Figure 3.4).

Figure 3.3 Acquirers' abnormal accruals prior to M&A by payment method

The following figure depicts the mean abnormal accruals percent detected in the quarterly earnings of the overall sample of acquirers as well as the pre and post-SOX subsamples over the last four fiscal quarters prior to the M&A announcement after splitting acquirers by the method of payment. *j* denotes the fiscal quarter in which the M&A deal is announced.

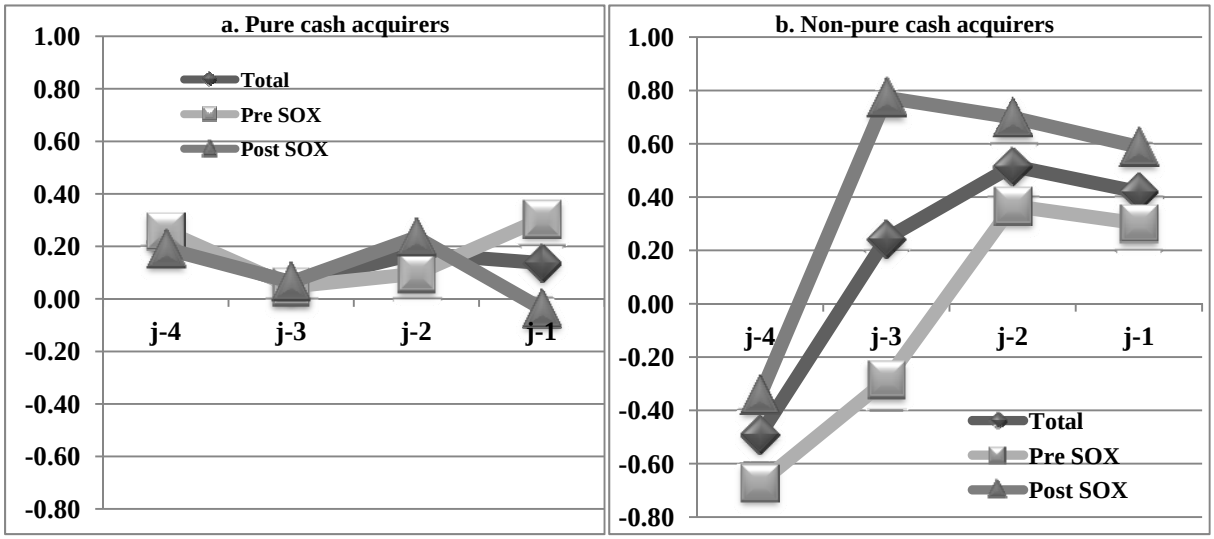


Figure 3.4 Acquirers' cumulative abnormal accruals prior to M&A by payment method

The following figure depicts the mean cumulative abnormal accruals percentage in the last four fiscal quarters prior to the M&A announcement for the overall sample of acquirers as well as the pre and post-SOX subsamples after splitting the acquirers by the method of payment. *C1* denotes abnormal accruals in quarter *j-1*, *C2* denotes the cumulative abnormal accruals in quarters *j-1* and *j-2*, *C3* denotes the cumulative abnormal accruals in quarters *j-1* to *j-3* and *C4* denotes the cumulative abnormal accruals in quarters *j-1* to *j-4*. *j* denotes the fiscal quarter in which the M&A deal is announced.

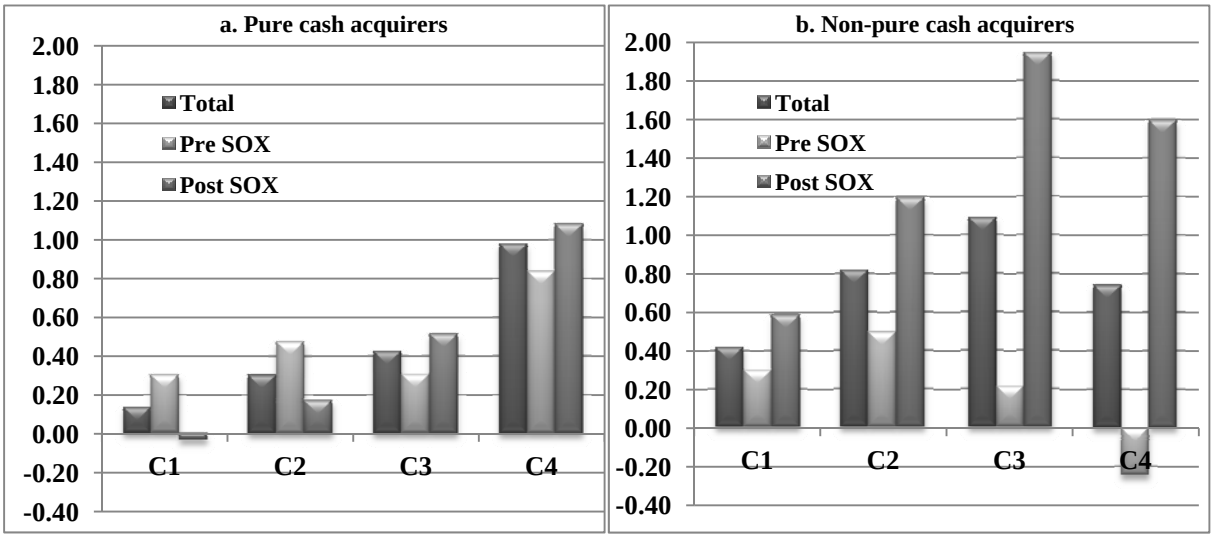


Table 3.6 provides the results of one-sample tests for the earnings management proxies at the subsamples level. The analysis of the cash acquirers subsample as reported in Panel A of Table 3.6 reveals that for all earnings management proxies, the mean value of abnormal accruals is not significantly different from zero either for the total sample, the pre-SOX sample or indeed for the post-SOX sample. This finding is consistent with the predictions of hypothesis H_{2b}. Therefore, the null hypothesis H_{02b} in this study can be rejected since no statistical evidence is found to support (H_{02b}: $\mu_{EM\ (Cash\ acquirers)} >$ or < 0).

On the other hand, Panel B of the same table reveals some supporting evidence for earnings management by non-cash acquirers in the total subsample and in particular, for those in the pre- and post-SOX categories, despite the noted differences in the magnitude, timing and significance among the categories. In the total subsample of non-cash acquirers, the one-sample *t-test* (*Wilcoxon-Z test*) for EM_{j-2}, *C2* and *C3* all show positive means (medians) of 0.5163 (0.2465), 0.8168 (0.4037) and 1.0886 (0.6739) respectively revealing significance at the confidence interval levels of 10 percent (5 percent), 5 percent (5 percent) and 5 percent (1 percent), respectively. Therefore, the null hypothesis (H_{02a}: $\mu_{EM\ (Non\text{-}cash\ acquirers)} = 0$) can be rejected. Furthermore, the alternative hypothesis (H_{A2a}: $\mu_{EM\ (Non\text{-}cash\ acquirers)} > 0$) can be accepted for the proxies EM_{j-2}, *C2* and *C3*. These findings provide robust evidence that managers of non-cash acquirers adopted accruals-increasing techniques around two to three quarters prior to announcing the M&A deal.

Table 3.6 One-sample test of earnings management for the acquirers' by the method of payment and SOX

The following table presents mean abnormal accruals percentages for the acquirers over the last four fiscal quarters preceding the deal's announcement date. The table demonstrates the results of one-sample t-test and Wilcoxon-Z test for mean and median values, respectively, to assess $H_0: \mu_{EM} = 0$ by pre and post-SOX for the cash acquirers in Panel A and the non-cash acquirers in Panel B. The symbols (*), (**) and (***) denote confidence interval of 10, 5 and 1 percent, respectively, in a two-tailed test.

Panel A: Pure cash acquirers

Earnings management proxies	Total (N=268)		Pre-SOX (N=123)		Post-SOX (N=145)	
	Mean *(t-value)*	Median *(Wilcoxon-Z)*	Mean *(t-value)*	Median *(Wilcoxon-Z)*	Mean *(t-value)*	Median *(Wilcoxon-Z)*
EM_{j-1}	0.1364 *(-0.43)*	0.0469 *(0.23)*	0.3048 *(0.63)*	0.1132 *(0.39)*	-0.0370 *(-0.09)*	-0.0774 *(0.72)*
EM_{j-2}	0.1732 *(-0.64)*	-0.0544 *(0.11)*	0.0956 *(0.23)*	-0.1686 *(0.45)*	0.2348 *(0.65)*	0.0201 *(0.32)*
C2	0.3051 *(0.65)*	-0.4769 *(0.86)*	0.4748 *(0.60)*	-0.8425 *(0.67)*	0.1730 *(0.3)*	-0.0754 *(0.45)*
EM_{j-3}	0.0570 *(-0.2)*	-0.0175 *(0.24)*	0.0466 *(-0.11)*	-0.0082 *(0.09)*	0.0638 *(0.17)*	-0.0766 *(0.38)*
C3	0.4250 *(0.81)*	-0.717 *(0.75)*	0.3069 *(0.35)*	-1.0335 *(0.61)*	0.5147 *(0.79)*	-0.3035 *(0.50)*
EM_{j-4}	0.2171 *(-0.58)*	-0.2321 *(0.12)*	0.2581 *(-0.67)*	0.4309 *(0.85)*	0.1911 *(0.34)*	-0.500 *(0.87)*
C4	0.9810 *(1.30)*	-0.1565 *(0.29)*	0.8393 *(0.83)*	-0.1371 *(0.004)*	1.0827 *(1.01)*	-0.2255 *(0.35)*

Panel B: Non- cash acquirers

Earnings management proxies	Total (N=436)		Pre-SOX (N=255)		Post-SOX (N=181)	
	Mean *(t-value)*	Median *(Wilcoxon-Z)*	Mean *(t-value)*	Median *(Wilcoxon-Z)*	Mean *(t-value)*	Median *(Wilcoxon-Z)*
EM_{j-1}	0.4191 *(-1.52)*	0.0625 *(1.31)*	0.3010 *(0.88)*	0.2548* *(1.71)*	0.5880 *(1.29)*	-0.1694 *(0.17)*
EM_{j-2}	0.5163* *(1.88)*	0.2465** *(2.15)*	0.3668 *(-0.86)*	0.7031* *(1.74)*	0.6982** *(2.20)*	-0.0951 *(1.08)*
C2	0.8168** *(2.06)*	0.4037** *(2.34)*	0.4953 *(0.87)*	0.7654* *(1.74)*	1.1966** *(2.21)*	0.4037 *(1.54)*
EM_{j-3}	0.2448 *(0.75)*	0.1067 *(1.11)*	-0.2863 *(-0.56)*	0.0008 *(0.16)*	0.7725* *(1.93)*	0.16* *(1.80)*
C3	1.0886** *(2.05)*	0.6739*** *(2.7)*	0.2146 *(0.26)*	0.674 *(1.48)*	1.9447*** *(2.97)*	0.82** *(2.31)*
EM_{j-4}	-0.4911 *(-1.25)*	0.0061 *(0.31)*	-0.6723 *(-0.98)*	0.4054 *(0.58)*	-0.3430 *(-0.77)*	-0.0406 *(0.31)*
C4	0.7421 *(1.05)*	-0.1154 *(1.42)*	-0.2436 *(-0.21)*	0.4859 *(0.81)*	1.5960* *(1.88)*	-0.0832 *(1.09)*

The evaluation of the results of pre- and post-SOX categories of non-cash acquirers, as shown in Panel B of Table 3.6, indicates a greater magnitude, a higher significance and in some way an earlier attempt of pre-merger earnings management in the post-SOX era. The mean values for each of the earnings management proxies, EM_{j-2} (0.6982) and $C2$ (1.1966), are significantly different from zero at the 5 percent confidence interval while and the proxies EM_{j-3} (0.7725) and $C4$ (1.5960) means are significant at the 10 percent confidence interval. Additionally, the $C3$ proxy has a mean value of 1.9447 which is very significant at the 1 percent confidence interval with a robust positive median of 0.820, also significant at a 5 percent level (Wilcoxon-Z= 2.31).

Interestingly, the one-sample *t-test* for the pre-SOX category of non-cash acquirers, as shown in Panel B of Table 3.6, reveals strong results for the post-SOX categories. Although EM_{j-1}, EM_{j-2}, $C2$ and $C3$ all have positive means (0.310, 0.3668, 0.4953 and 0.2146, respectively), none are significant. However, the Wilcoxon-Z scores of the positive median values of EM_{j-1} (0.2548), EM_{j-2} (0.7031) and $C2$ (0.7654) indicate significance at the 10 percent confidence interval, which suggests a late (i.e. closer to the deal's announcement date) attempt to inflate pre-merger earnings.

Surprisingly, the pre- versus post-SOX mean differences for all earnings management proxies are positive, as shown in Table 3.7. However, the null hypothesis (H_{03b}: $\mu_{\text{EM pre-SOX (Non-cash acquirers)}} = \mu_{\text{EM post-SOX (Non-cash acquirers)}}$) can only be rejected for the unexpected differences of the proxies EM_{j-3} with a mean difference of 1.0588, and $C3$ with a mean difference of 1.7301. In

this light, the alternative hypothesis (H_{A3b}: $\mu_{EM\ pre\text{-}SOX\ (Non\text{-}cash\ acquirers)} < \mu_{EM\ post\text{-}SOX\ (Non\text{-}cash\ acquirers)}$) can be accepted at the 10 percent confidence interval.

Table 3.7 Two-sample test of earnings management differences for the non-cash acquirers by SOX

The following table presents mean and median abnormal accruals percentages for the non-cash acquirers over the last four fiscal quarters preceding the deal's announcement date. The table demonstrates the results of t-test and Wilcoxon-Z test in parentheses. The two-sample tests were applied for mean and median values, respectively, for assessing H_0: $\mu_{EM\ (pre\text{-}SOX)} = \mu_{EM\ (post\text{-}SOX)}$. The results are shown for the overall sample of non-cash acquirers and for each subsample by pre and post-SOX. The symbols (*), (**) and (***) denote confidence interval of 10, 5 and 1 percent, respectively, in two-tailed test.

Earnings management proxies	Pre-SOX (N=255) Mean (Median)	Post-SOX (N=181) Mean (Median)	Difference *(Post – Pre)* Mean (Median)	*t-value*	*Wilcoxon-Z*
EM_{j-1}	0.3010 (0.2548)	0.5880 (-0.1694)	0.287(-0.4242)	*0.51*	*0.81*
EM_{j-2}	0.3668 (0.7031)	0.6982 (-0.0951)	0.3314(-0.7982)	*0.60*	*0.64*
C2	0.4953 (0.7654)	1.1966 (0.4037)	0.7013(-0.3617)	*0.88*	*0.40*
EM_{j-3}	-0.2863(0.0008)	0.7725 (0.1600)	1.0588(0.1592)	*1.66**	*0.34*
C3	0.2146 (0.6740)	1.9447 (0.8200)	1.7301(0.1460)	*1.65**	*0.42*
EM_{j-4}	-0.6723(0.4054)	-0.3430(-0.0406)	0.3293(-0.4460)	*0.42*	*1.25*
C4	-0.2436(0.4859)	1.5960 (-0.0832)	1.8396(-0.5691)	*1.30*	*0.06*

In summary, the reported evidence of earnings management for the aggregate sample of acquirers is influenced by the non-cash acquirers. Separating acquirers according to the payment method used is not only supported by theory, but also by the empirical evidence.

Comparing the findings from the simultaneous analysis of the aggregate and segregate samples highlights the relevance and the importance of the stratification procedure through considering the payment method, when testing an earnings management hypothesis.

Furthermore, the pre- and post-SOX investigations of earnings management metrics show a greater magnitude, higher significance and an earlier exercise of accrual-inflating techniques in the post-SOX period. Additionally, there is some evidence for unexpected positive mean differentials of abnormal accruals between pre-SOX and post-SOX categories.

3.5.3. Earnings Management on the Target's Side

Analysing the targets within the sample indicates that the mean values of abnormal accruals over the last four pre-merger quarters seem to generally decline until just before the very last quarter prior to the announcement date of M&A deal (quarter *j-1*) as exhibited in Figure 3.5. The resultant curves for the total sample and post-SOX category are U shaped and they, interestingly, look like a complete opposite to the acquirers' curves of pre-merger abnormal accruals in Figure 3.1.

At the overall sample level, the descriptive statistics reported in Panel C of Table 3.3 show that the mean abnormal accruals are highest in the quarter *j-4* with a value of 0.8193 and a standard deviation of 6.2526. On the other hand, EM_{j-2} has the lowest mean value of abnormal accruals (-0.2253) with the highest standard deviation (6.8639). However, the one-sample test results presented in Table 3.8 reveal that EM_{j-4} is the only earnings management proxy that has a positive mean (0.8193) significantly different from zero, at a 5 percent confidence interval. Its median value (0.383) is positive with a Wilcoxon-Z value of 2.43, indicating significance of 5 percent as well.

Figure 3.6 Targets' abnormal accruals prior to M&A

The following figure depicts the mean abnormal accruals percent detected in the quarterly earnings of the overall sample of targets (N=704) as well as the pre and post-SOX subsamples (N=378 and 326, respectively) over the last four fiscal quarters prior to the M&A announcement. *j* denotes the fiscal quarter in which the M&A deal is announced.

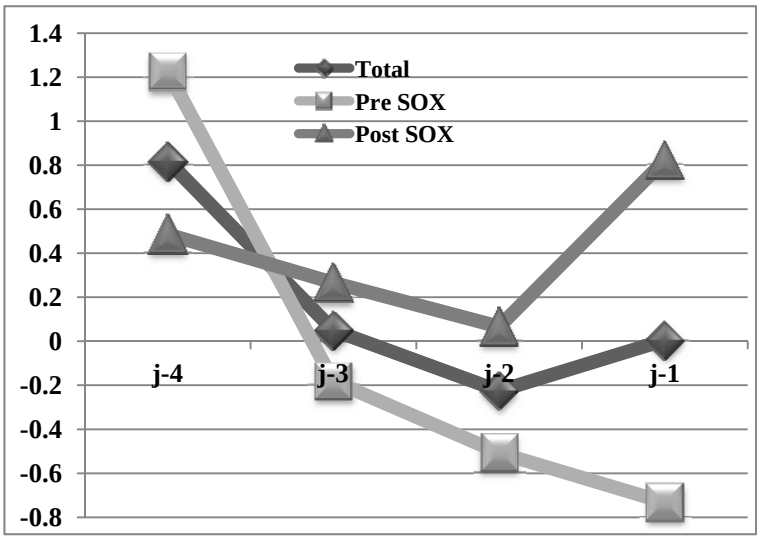
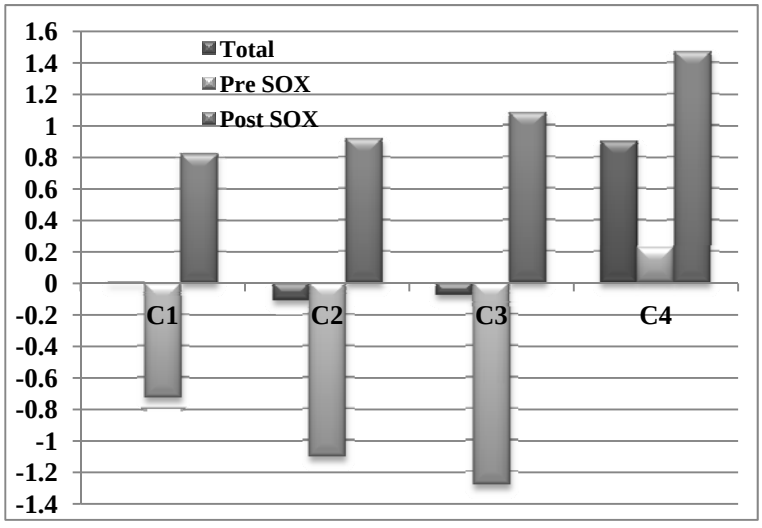


Figure 3.5 Targets' mean cumulative abnormal accruals prior to M&A

This figure depicts the mean cumulative abnormal accruals percentage in the last four fiscal quarters prior to the M&A announcement for the overall sample of targets (N=704) as well as the pre and post-SOX subsamples (N=378 and 326, respectively). *C1* denotes abnormal accruals in quarter *j-1*, *C2* denotes the cumulative abnormal accruals in the quarters *j-1* and *j-2*, *C3* denotes the cumulative abnormal accruals in the quarters *j-1* to *j-3* and *C4* denotes the cumulative abnormal accruals in quarters *j-1* to *j-4*. *j* denotes the fiscal quarter in which the M&A deal is announced.



After splitting the total sample into the pre- and post-SOX categories, the results show there are more significant proxies of earnings management. At times, the results indicate a dramatic shift in the direction of the abnormal accruals over a time window of four pre-merger quarters.

Table 3.8 One-sample test of the targets' earnings management

The following table presents mean and median abnormal accruals percentages for targets over the last four fiscal quarters preceding the deal's announcement date. The table demonstrates the results of t-test and Wilcoxon-Z test in parentheses. The one-sample tests were applied for mean and median values, respectively, for assessing H_0:$\mu_{EM} = 0$. The results are shown for the overall sample of targets and for each subsample by pre and post-SOX. The symbols (*), (**) and (***) denote confidence interval of 10, 5 and 1 percent, respectively, in two-tailed test.

Earnings management proxies	Total (N=704)		Pre-SOX (N=378)		Post-SOX (N=326)	
	Mean *(t-value)*	Median *(Wilcoxon-Z)*	Mean *(t-value)*	Median *(Wilcoxon-Z)*	Mean *(t-value)*	Median *(Wilcoxon-Z)*
EM_{j-1}	0.0049 *(0.02)*	-0.0002 *(0.002)*	-0.7323* *(-1.66)*	-0.5171* *(-1.95)*	0.8222* *(1.88)*	0.7033** *(2.18)*
EM_{j-2}	-0.2253 *(-0.61)*	-0.0944 *(1.10)*	-0.5066 *(-0.93)*	-0.1043 *(-0.92)*	0.0660 *(0.13)*	-0.0767 *(0.68)*
C2	-0.1105 *(-0.29)*	-0.1947 *(0.416)*	-1.108** *(-1.98)*	-0.579* *(-1.81)*	0.9174* *(1.81)*	0.5408 *(1.35)*
EM_{j-3}	0.0504 *(0.15)*	0.1711 *(1.30)*	-0.1813 *(-0.50)*	0.1184 *(-0.04)*	0.2659 *(0.49)*	0.3038* *(1.80)*
C3	-0.0793 *(-0.17)*	-0.2541 *(0.30)*	-1.285** *(-1.99)*	-1.326** *(-2.23)*	1.0804 *(1.64)*	0.8324* *(1.89)*
EM_{j-4}	0.8193** *(2.34)*	0.3830** *(2.43)*	1.2252* *(1.85)*	0.4519* *(1.89)*	0.4853 *(1.47)*	0.3678 *(1.58)*
C4	0.9010 *(1.49)*	0.8689 *(1.38)*	0.2241 *(0.22)*	0.2058 *(-0.46)*	1.4709** *(2.10)*	1.697** *(2.42)*

The documented results on the pre-SOX category show that most of those statistically significant earnings management proxies have negative mean (median) values, as shown in Table 3.8. Specifically, the mean (median) value of EM_{j-1} is -0.7323 (-0.5171) significant at the 10 percent (10 percent) level; the mean (median) value of *C2* is -1.108 (-0.5790)

significant at the 5 percent (10 percent) level; and the mean (median) value of *C3* is -1.285 (-1.326) significant at the 5 percent (5 percent) confidence interval, all pertaining to the t-test (Wilcoxon-Z test). However, EM_{j-4} has the lone significant positive mean (median) value of 1.2252 (0.4519), at the 10 percent (10 percent) confidence interval.

These findings on the pre-SOX category seem to be consistent somehow with the inferences of most of the previous literature suggesting that target firms do not have sufficient time to adopt accrual-increasing techniques because, unlike acquirers, they are normally not aware about the merger plan until they are approached by bidders (Erickson and Wang 1999; Koumanakos et al. 2005; Baik et al. 2007).

In contrast, all earnings management proxies in the post-SOX category are positive. Additionally, each one, except for EM_{j-4}, have much higher mean and median values when compared to those of pre-SOX era as reported in Table 3.8. Although each of the proxies EM_{j-1}, *C2* and *C4* has a mean value significantly different from zero, the evidence concerning earnings management in quarter *j-1* is very important because it most likely is indicating that there is an intentional accruals manipulation due to being approached by the acquirer. These results indicate that the first null hypothesis (H_{01}: $\mu_{EM\ (Targets)} = 0$) can be rejected while the alternative hypothesis (H_{A1}: $\mu_{EM\ (Targets)} > 0$) can be accepted for the mean value (0.8222) of EM_{j-1} in the post-SOX category at a 10 percent confidence interval. The median value (0.7033) of EM_{j-1} is also significant at the 5 percent confidence interval (Wilcoxon-Z value = 2.18) indicating robustness.

Table 3.9 Two-sample test of earnings management differences for the targets by SOX

The following table presents mean and median abnormal accruals percentages for targets over the last four fiscal quarters preceding the deal's announcement date. The table demonstrates the results of t-test and Wilcoxon-Z test in parentheses. The two-sample tests were applied for mean and median values, respectively, for assessing H_0: $\mu_{EM\ (pre\text{-}SOX)} = \mu_{EM\ (post\text{-}SOX)}$. The results are shown for the overall sample of targets and for each subsample by pre and post-SOX. The symbols (*), (**) and (***) denote confidence interval of 10, 5 and 1 percent, respectively, in two-tailed test.

Earnings management proxies	Pre-SOX (N=378) Mean (Median)	Post-SOX (N=326) Mean (Median)	Difference *(Post – Pre)* Mean (Median)	*t-value*	*Wilcoxon-Z*
EM_{j-1}	-0.732(-0.517)	0.8221(0.7032)	1.5541(1.2202)	*2.50***	*2.88****
EM_{j-2}	-0.506(-0.104)	0.0660(-0.076)	0.5720(0.0280)	*0.78*	*0.24*
C2	-1.107(-0.579)	0.9173(0.5407)	2.0243(1.1197)	*2.69****	*2.25***
EM_{j-3}	-0.181(0.1183)	0.2659(0.3038)	0.4469(0.1855)	*0.67*	*1.25*
C3	-1.284(-1.326)	1.0804(0.8323)	2.3644(2.1583)	*2.57***	*3.00****
EM_{j-4}	1.2251(0.4519)	0.4852(0.3677)	-0.7399(-0.0842)	*-1.05*	*-0.41*
C4	0.2240(0.2057)	1.4708(1.6971)	1.2468(1.4914)	*1.03*	*1.94***

Holding the pre-SOX category of targets as a control group, an awakening shift in targets' practices toward more aggressive earnings management is noticed in post-SOX targets. More specifically, abnormal accruals for the pre-SOX group are negative on average for the past three pre-merger quarters, while the image appears completely opposite after the enactment of SOX onwards. This positive shift in targets' earnings management behaviour is reported in Table 3.9 in which the results are evaluated specifically concerning the difference between pre- and post-SOX for all earnings management proxies.

The results of testing the null hypothesis (H_{03a}: $\mu_{EM\ pre\text{-}SOX\ (Targets)} = \mu_{EM\ post\text{-}SOX\ (Targets)}$) in Table 3.9 confirm the observed positive shift in the proxies EM_{j-1}, *C2* and *C3*. The null hypothesis (H_{03a}) can be rejected for these proxies while the alternative hypothesis (H_{A3a}: μ_{EM}

$_{\text{pre-SOX (Targets)}} < \mu_{\text{EM post-SOX (Targets)}}$) can be accepted at the 5 percent confidence interval level for the proxies EM_{j-1} and *C3* with mean differences of 1.5541 and 2.3644 respectively, and at the 1 percent level for the proxy *C2* and the respective mean difference of 2.0243. This inference is robust as it holds under the *Wilcoxon-Z* test at a confidence interval of 1 percent for the proxies *EM j-1* and *C3* and at the 5 percent level for *C2*.

The overall results concerning the target clearly show there has been a dramatic change in the magnitude as well as the direction of abnormal accruals. The proposition that SOX has given targets a greater capability of manipulating their earnings in the very last quarter before announcing a M&A does not have any theoretical foundations and may be inaccurate to posit. However, the indirect call of SOX for more due diligence and a stronger use of M&A advisors (see Madura and Ngo 2010) may have resulted in a longer duration for the deal's to complete (which is 3 months on average) while there may also have been an effect for more efficient management in influencing EM_{j-1}.

Despite the fact that this study is using an *ex post* sample of targets, the intent of their respective managerial teams towards the acquisition (and therefore toward pre-merger earnings management) is still not easy to anticipate in terms of timing and therefore is subsequently not easy to control for. In other words, a M&A proposal could be an absolute surprise to some targets, while some other firms in the sample could be already working out their reports to boost their acquisition candidacy, as suggested by Meisel (2006). Therefore, an active decision by the firm's management team to increase their firm's acquisition attractiveness could be a motive to conduct early earnings management, which may explain the observed abnormal accruals in periods earlier than quarter *j-1*.

3.6. Summary and Conclusion

Using the quarterly earnings of a sample of US public firms engaged in M&A's announced between 1999 and 2008, this chapter examines the potential differences in pre-merger earnings management in pre- and post-Sarbanes-Oxley eras over four quarters prior to the M&A announcement date. A cross-sectional modified Jones' (1991) accruals model is employed after constructing industry-performance matched portfolios for all calendar quarters for the period of the study, as advocated by Kothari et al. (2005), Louis (2004) and Gong et al. (2008).

There are a number of contributions to the relevant literature presented by this chapter. First, it reports the existence of earnings management for each of the last four quarters prior to the deal announcement not only for the acquiring firms, but also for their targets concurrently by using a sample that includes M&A deals before and after SOX was enacted. Second, it adds to the on-going debate of the effectiveness of SOX in improving the credibility of financial reporting by investigating a non-random (i.e. structured) sample of firms that have the motivation to practice earnings management – merging firms. Finally, by using quarterly reports, which are available by the US reporting environment, this study makes a further twofold contribution. On the one hand, quarterly statements are superior to annual ones in terms of their timeliness. Therefore, this study provides a track of the managerial discretion over accruals in the previous four successive quarters prior to a deal's announcement in order to precisely locate the timing of manipulating earnings. On the other hand, since quarterly statements are not audited by an external auditor unlike annual reports, this study provides an insight to some

implications of SOX on the interim reporting practices, as Ashbaugh-Skaife et al. (2008) previously suggested for future research

The findings of this study are consistent with those of Erickson and Wang (1999), Louis (2004) Baik et al. (2007) and Botsari and Meeks (2008) reporting significant evidence of upward pre-merger earnings management by non-cash acquirers, which use their own shares in the deal's payment structure, while, as expected, no evidence of pre-merger earnings management is found by cash acquirers since they lack the motivation to influence their share value before completing the deal. Earnings management is most evident in the second and the third quarter before the deal.

Even when acquirers are not separated based on the payment method, significant evidence of per-merger earnings management is found similar to the results of Koumanakos et al. (2005). However, these results do not mean that acquirers necessarily have the motivation to manage earnings regardless of the method of payment. The method of payment analysis (i.e. cash versus non-cash) reveals that such results are driven by the existence of non-cash acquirers, which evidently have higher abnormal accruals, in the aggregate sample. This explains why the exclusion of cash acquirers from the samples is becoming a common practice in most research pertaining to earnings management in M&A's (see, for example, Botsari and Meeks 2008; Gong et al. 2008; Pungaliya and Vijh 2008; Young 2008; Alsharairi and Salama 2011).

The renowned SOX Act was enacted in 2002. It has been repeatedly claimed that reliability and transparency of financial reporting has improved, while frauds and conflicts of interests have reduced in the financial reporting environment since the regulatory reform in the US

corporate world since the enforcement of SOX (Grasso et al. 2009; Wilson 2009; Ghosh et al. 2010). Therefore, this study extends its analysis by comparing the magnitude of pre-merger earnings management in pre- and post-SOX periods. Surprisingly, non-cash acquirers in the post-SOX period show a higher magnitude and an earlier exercise of pre-merger earnings management.

Interestingly, the investigation of targets reveals significant evidence of pre-merger earnings management in the very last quarter immediately before announcing the deal, exclusively in the post-SOX subsample. It is noted that the ability of target firms to manage earnings before M&A has been a controversial issue in literature, not because they lack the incentive to do so as most would agree targets would certainly have a motive to influence their premerger value, but rather because of a time constraint (Easterwood 1997; Erickson and Wang 1999; Meisel 2006; Ben-Amar and Missonier-Piera 2008). However, targets cannot systematically predict the time of their M&A candidacy, which inevitably varies considerably, because M&A transactions occur in a sporadic manner. Consistent with Chahine et al. (2011), although the overall evidence in this study does not support the argument that the containment of earnings management improved in the post-SOX era when compared to the pre-SOX era (which is argued by a number of studies such as, Lobo and Zhou 2006; Cohen et al. 2008), this does not necessarily mean that the earnings management problem has exacerbated since the enactment of SOX.

The following chapter builds on the findings reported here through using a sample of non-cash acquirers as a purposeful sample in examining the impact of high leverage on the ability of using accruals' reserves to manage earnings.

Chapter 4. Leverage and Pre-merger Earnings Management by Non-cash Acquirers

Chapter 4

Leverage and Pre-merger Earnings Management by Non-cash Acquirers[37]

4.1. Introduction

In the previous chapter (Chapter 3) pre-merger earnings management was investigated for samples of acquiring and target firms in periods before and after the enactment of the Sarbanes-Oxley Act of 2002. At the root of many of large-scale corporate scandals at large corporations such as *Enron*, *Worldcom* and elsewhere in the US, corporate legislation reform embodied by SOX enforcement, was not the only consequence. As a result of these scandals, public perception has evolved so that earnings management has been portrayed as a potential tool of managerial opportunism, which managers can employ in order to alter accounting numbers for their private interests rather than for the greater good of their shareholder group (Jiraporn et al. 2008).

While the conflict of interests between managers and other stakeholders due to separation of control and corporate ownership is well known, an important aspect of managing these differing interests is the investor need to control the managers' behaviour through monitoring and controlling mechanisms (Jensen and Meckling 1976; Watts and Zimmerman 1986).

[37] A major part of Chapter 4 is accepted for publication in the *Journal of Financial and Economic Practice* in a forthcoming issue of 2011, under the title "*Does High Leverage Impact Earnings Management?: Evidence from Non-cash Mergers and Acquisitions.*" An older version of the paper was previously accepted for presentation in the *Global Conference on Business and Finance*, Las Vegas, USA, January 2nd-6th, 2011. The author could not present due to visa issues, however, the paper won the Best Paper Award as recommended by two blind conference referees.

As a result, a growing area of research has emerged concentrating on the effectiveness of various internal (such as boards and audit committees) and external (such as creditors and auditors) monitoring and controlling parties in mitigating the exacerbation of opportunistic earnings management (Becker et al. 1998; Chung et al. 2002; Goncharov 2005; Peasnell et al. 2005; Jiraporn et al. 2008).

This chapter focuses on the role of leverage as a constraint of managerial opportunistic discretionary power. It addresses the research question of whether the monitoring role of creditors can inhibit management's ability to manage earnings preceding events characterised by evident incentives for earnings management. More specifically, this chapter examines the hypothesised controlling effect of abnormally high leverage on pre-merger income-increasing earnings management by a non-cash acquirer, given that managers have the incentive to manage earnings upward, as supported by the evidence discussed in Chapter 3.

For many years now, earnings management has been of grave concern for both practitioners and regulators alike, and has resultantly received considerable attention in the accounting literature. This literature is immense and still continues to develop. Around a decade ago, it was noted that research in this field had primarily focused "*almost exclusively on understanding whether earnings management exists and why* (Healy and Wahlen 1999, p.380)" while recently it has tended to move towards the examination of causation factors and the consequence of such corporate activity.

Thus far, there has been a general attitude in the research that good corporate governance should result in less earnings management (see, for example, Bushman and Smith 2001;

Chung et al. 2002; Yang and Krishnan 2005; Chang and Sun 2009; Ghosh et al. 2010). Nonetheless, the role of creditors or the leverage effect on earnings management is not adequately understood at present, with much inconsistent empirical evidence in different research settings being found (Jaggi and Picheng 2002; Zhaoyang et al. 2005; Shen and Chih 2007; Wasimullah et al. 2010).

Cheryl Gray, a lead economist at the World Bank, emphasises the crucial role of creditors in promoting corporate governance stating that "*effective debt monitoring and collection play a crucial role in corporate governance in market economies and require adequate information, creditor incentives, and an appropriate legal framework* (Gray 1997, p.29)." This view is consistent with an interactive system of corporate governance as introduced by Triantis and Daniels (1995). Their work tries to describe a stylised theory of the role of stakeholders, including lenders, in an effective governance system that is more able to control managerial opportunism.

The different definitions of earnings management are broad enough to embrace both opportunistic and beneficial (i.e. efficient) earnings management practices[38]. For example, Healy and Wahlen (1999, p.368) define earnings management by the use of *"... judgment in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers.*"

[38] The classification of managerial practices into opportunistic or beneficial is based on an agency theory perspective (Jiraporn et al. 2008). Therefore, managerial opportunism occurs whenever managerial practices are meant to benefit firm's managers rather than shareholders. The beneficial type is associated with the efficiency of management.

Despite the fact that the bottom line of an income statement (i.e. the reported accounting earnings) consists of two components - a cash component and an accrual component - it is used practically for assessing a firm's ability to generate future cash flows in order to pay dividends and interest so that the firm's equity value can be determined while managerial performance can also be evaluated (Ronen and Yaari 2008). However, it is important to bear in mind that a major portion of accruals is subject to managerial discretionary power, and this brings to light a management team's ability to shift earnings between accounting periods to influence users' perceptions.

Managers' motivation to manage earnings is driven by various incentives. On the one hand, the underlying incentives could be opportunistic (i.e. arising as a consequence of conflict of interests between managers and shareholders), to improve the managers' position for example (Iturriaga and Hoffmann 2005), obscuring facts that stakeholders ought to know (Loomis 1999), making extra gains from management buy outs (Perry and Williams 1994) or obtaining bonuses through management compensation contracts (Schipper 1989; Dechow and Skinner 2000).

On the other hand, earnings management can benefit shareholders and affect their wealth positively in instances whereby reported earnings could either meet analysts' forecasts and fulfil capital market expectations (Yu 2008), influence short-term share prices before equity issues in IPOs, SEO and M&A (Teoh et al. 1998; DuCharme et al. 2001; Louis 2004), or can act as a response for carrying out debt and other external contractual agreements (Dechow and Skinner 2000; Jaggi and Picheng 2002).

Since managerial motives per se play a decisive role when exercising the discretionary power over accruals, examining the impact of leverage on earnings management should lead to a better understanding if the motive effect is neutralised for all observations. In other words, the empirical test needs to control for the experimental setting so that all firms under study have the same motive that drives their decision to manage earnings.

Controlling for the motive of premerger earnings management by holding it constant, this Chapter investigates the leverage controlling effect on earnings management of a sample of non-cash acquiring firms. It provides empirical evidence on how excess debt creation does impact managerial discretionary power, given the existence of the managerial motivation to inflate the pre-merger reported earnings.

The remainder of this chapter is organised as follows. Section 4.2 reviews the relevant literature related to leverage in earnings management studies while section 4.3 develops a theoretical foundation for the stated hypothesis that is to be tested in this study. Section 4.4 specifies the sample, discusses research methodology and defines the variables employed within this work. Section 4.5 reports the results generated while section 4.6 provides a summary of the final concluding remarks of this chapter.

4.2. Literature Review

4.2.1. Introduction

There are two main areas of research in the literature that are closely related to the research question addressed in this chapter. The first relevant area of research for this work pertains to pre-merger earnings management undertaken by non-cash acquirers. For brevity, because this

area has already been discussed in detail in the previous chapter (see specifically section 3.2.2), it is not repeated here. However, a reference to those studies is made whenever needed in later sections of this chapter.

The second area of related literature for the theoretical foundations of this chapter is the relationship between leverage and earnings management, which is discussed in section 4.2.2 as follows.

4.2.2. Leverage and Earnings Management

The literature portrays the relationship of leverage on earnings management with controversial debates in both empirical and theoretical schools. In particular, two leading schools of thought are found describing the relationship between leverage and earnings management.

4.2.2.1. The Positive Association between Leverage and Earnings Management

A number of studies have suggested that managers have a motivation to change accounting methods in order to evade accounting-based restrictions which are found in debt contracts.

Press and Weintrop (1990) report that the level of leverage is a good proxy for the existence of accounting constraints, default risk or firms' investment opportunities. They provide evidence that high leverage is positively associated with the likelihood of violating debt covenants. Furthermore, their work documents a positive relationship between the presence of accounting-based leverage constraints and the firm's income reporting strategies.

In accordance with these results, Sweeney (1994) and DeFond and Jiambalvo (1994) further work in this field opting not to use the level of leverage as a proxy for debt covenants. Instead

they use samples of firms which have actually reported violations of debt covenants in their annual reports. In Sweeney's (1994) study, evidence is shown that supports the notion that managers adopt income-increasing accounting choices as a response to the threat of potential default.

Similarly, DeFond and Jiambalvo (1994) find that firms near default employ income-increasing accounting changes in order to delay their technical default. Specifically, their evidence reveals that abnormal accruals are significantly positive in the year prior to default violation by firms in their sample. Watts and Zimmerman (1990) and Mohrman (1996) support these results and argue that firms with higher leverage levels are more likely to adopt accounting procedures that increase their income.

Richardson et al. (2002), in a paper that examines the usefulness of accounting information in predicting earnings management, argue that leverage provides two different sources to motivate the managing of earnings. Firstly, incentives are argued to be provided within the covenants of debt contractual agreements in order to avoid the costly violation while they can also be found in the performance pricing features of private debt contracts which can be violated in order to receive lower rates of interest. The evidence obtained indicates that higher leverage is a motivation for aggressive accounting policies when studying a sample of firms that restated their annual earnings.

Unlike these particular studies which look at the level or magnitude of accruals, Zhaoyang et al. (2005) investigate the determinants of the variability of accruals. Along with other

variables included in their study, leverage is found to be positively related to the variability of accounting accruals.

4.2.2.2. The Negative Association between Leverage and Earnings Management

While evidence has documented the positive relation between lavage and earnings management, as is true with most academic fields, this does not completely reveal the full picture. There exists strong debate over the nature of the relation with opposing academics arguing that leverage reduces abnormal accruals and has a deterring effect on managers' attempt to manage earnings, rather than the above discussed motivating effect. For example, DeAngelo et al. (1994) study the accounting choices of a sample of troubled firms with binding debt covenants - which are normally characterised by high leverage - and find that the managers of these firms adopted accounting choices that largely reflected their firms' financial difficulties, instead of attempting to inflate accruals.

In a similar study that also considers financially distressed firms, Jaggi and Picheng (2002) find mixed evidence regarding the accounting choices adopted by managers of firms with financial difficulties. However, Jaggi and Picheng (2002) explain that their mixed findings are influenced by the differing severity of financial distress and whether debt is renegotiated or restructured.

Addressing the prevailing academic debate, Becker et al. (1998) argue that leverage might be either positively or negatively associated with earnings management. Nonetheless, their analysis reveals that their leverage variable has a significant negative coefficient when regressed on earnings management. The authors argue that since high leverage is associated

financial difficulties, contractual renegotiations may then provide incentives to reduce the level of reported earnings and thus offer this as an explanation for their findings.

DeFond and Park (1997) reflect upon the implications of the evidence provided by the work of Becker et al. (1998). In their analysis they include leverage, among other control variables, and examine the effect of earnings management when anticipating the firm's future earnings. They confirm Becker et al.'s evidence by reporting a significant negative relationship between leverage and earnings management.

Moreover, support can also be found in the work of Dechow et al. (2000) who conduct a study which compares high-accrual firms with low-accrual firms. The study examines a sample of firms that outperformed their benchmarks and document significant evidence that leverage is negatively associated with a firm's accruals.

Beneish (2001), in his paper "*Earnings Management: A Perspective*", discusses different sources of incentives for earnings management including debt contracts. Assuming that lenders in debt contracts may use accounting numbers to require certain performance-related objectives to be met, Beneish (2001) argues that debt covenants provide incentives for managers to manage earnings to avoid the cost of debt covenant violations. Nonetheless, the mixed results of the work do not provide a reliable support for the positive influence of leverage as proposed in his paper.

In a different paper, Ke (2001) investigates the factors that influence consecutive increases in quarterly earnings as well as long strings of consecutive earnings increases including those due to manipulating accruals. Ke (2001) provides interesting evidence highlighting the

external monitoring pressure of financial analysts and creditors by reporting that firms are less likely to show increases in earnings through manipulating accruals if the firms are highly leveraged as well as followed by analysts.

There is a number of papers in the literature in addition to Ke's (2001) study that stress the monitoring role of creditors and the creation of extra managerial control via debt financing.

Chung et al. (2002), for instance, argues that managers' ability to opportunistically manage their firms' reported earnings is constricted by the existence of outside monitoring by stakeholders such as institutional ownership and creditors. Their empirical evidence supports their proposition by reporting that abnormal accruals are inversely related to the level of the firm's leverage – used as a proxy for the monitoring conducted by creditors. Later, Chung et al. (2005) re-examine the leverage versus earnings management relationship and robustly report consistent evidence confirming that firms with high debt levels are subject to increased monitoring by lenders and bankers thus restraining the excessive use of discretionary accruals.

Likewise, Zhong et al. (2007) investigate the impact of monitoring by outside stakeholders such as blockholders on earnings management. They include a leverage proxy (a simple debt ratio) in their regression analysis to control for the monitoring effect exerted by creditors. The results of their study reveal a significant coefficient for the leverage proxy indicating further evidence of the negative relationship between leverage and managers' discretionary power over reported accounting earnings.

Lee et al. (2007) include a leverage variable in their study while examining the impact of particular attributes of organizational structure on earnings management. Their results indicate

that earnings management is inversely related to leverage as well as the presence of external directors in the firm's board. The findings of Lee et al. (2007) provide support to the argument of the role of external monitoring in corporate governance.

Constructing the creditors' monitoring proxy slightly differently to previous studies, Jelinek (2007) focuses on the increases in leverage instead of considering the absolute volume of leverage. She examines the effect of these changes on earnings management across a five-year sample period for firms that undergo leverage increases. The findings suggest that firms associated with leverage increases have shown a greater reduction in earnings management relative to those firms with consistent high leverage volumes (i.e. without observed further increases).

The literature also shows consistent international evidence obtained from samples from different countries. Using a sample of Chilean firms, Iturriaga and Hoffmann (2005) examine the effect of capital structure on earnings management. They emphasise the monitoring and governance role of leverage as they argue that there is a negative relationship between debt financing and the use of discretionary power in managers' accounting decisions, since the higher the leverage the more thoroughly the monitoring control is applied by lenders. Moreover, they suggest that managers of highly leveraged firms have fewer motives to manage earnings because their creditors are interested in debt service rather than accounting information, which means that financial statements have less relevant informational content in this case. The empirical findings of Iturriaga and Hoffmann (2005) support their argument by indicating a significant negative influence of leverage on earnings management.

In the German market, Tendeloo and Vanstraelen (2005) find some evidence of the negative relationship between the absolute value of abnormal accruals and leverage while investigating the implications of the voluntary adoption of the International Financial Reporting Standards (IFRS) by German firms on earnings management. In another recent paper, Wasimullah et al. (2010) analyse firms from the textile industry in Pakistan and address a direct research question of whether or not high leverage can control opportunistic earnings management. They find that high leverage reduces positive abnormal accruals that result from the managerial opportunistic adoption of accounting choices. Similar evidence from Spain is presented in another recent paper by Rodríguez-Pérez and Hemmen (2010), who argue that managers' informational advantage over debt-holders (i.e. agency problem) is reduced by increasing the monitoring cost involved.

4.2.1. Summary and Potential Contributions to Literature

The literature relating to the potential implications of debt financing on earnings management is split regarding the nature of this relationship with two leading trends, resulting in a number of issues worth investigating further.

On the one hand, some literature has documented evidence of a positive relation between the level of the firm's leverage and earnings management. This has most notably been explained by the notion of firms' attempts to avoid the cost of violating debt contractual covenants (Press and Weintrop 1990; Watts and Zimmerman 1990; DeFond and Jiambalvo 1994; Sweeney 1994; Mohrman 1996; Richardson 2000; Zhaoyang et al. 2005).

On the other hand, there is a wealth of literature which provides robust evidence of an inverse relationship between leverage and earnings management that is justified by two main arguments - either managers' of financially distressed firms, which are normally excessively leveraged, use income-decreasing accounting choices in view of contractual renegotiations and restructuring (DeAngelo et al. 1994; Becker et al. 1998; Jaggi and Picheng 2002), or managers' decisions over obtaining additional capital through issuing debt, indeed, results in bringing an additional monitoring group (i.e. creditors) to the firm, which eventually intensifies the containment of managerial opportunistic behaviour and improves the overall governance (Ke 2001; Chung et al. 2002; Chung et al. 2005; Jelinek 2007; Lee et al. 2007; Zhong et al. 2007). There is further evidence in the literature based on samples obtained from different countries such as Chile (Iturriaga and Hoffmann 2005), Germany (Tendeloo and Vanstraelen 2005), Spain (Rodríguez-Pérez and Hemmen 2010) and Pakistan (Wasimullah et al. 2010).

Both sides of the arguments are supported by theory and evidence in their favour, but neither has delivered a compelling and definitive conclusion. For instance, many studies have either failed to find statistically significant evidence on the relation between leverage and abnormal accruals (see, for example, Beneish 2001; Chung and Kallapur 2003; Peasnell et al. 2005), or they have provided mixed evidence (see, for example, Jaggi and Picheng 2002; Shen and Chih 2007).

Furthermore, despite the enormous research that has been done so far on the association between leverage and earnings management, there still remains a number of researchable gaps in this area of research, including the influence of leverage on earnings management in the

presence of other intervening incentives of earnings management. Therefore, the question of the association between leverage and earnings management is still open for further investigation.

This study distinguishes itself from prior studies and offers two main contributions to the existing literature. First, it employs a structured sample of non-cash acquiring firms which already have the motivation to manage their earnings upwards, in examining the impact of debt-financing on earnings management. The methodology of this study provides more reliable results when comparing the magnitude of earnings management among firms with different level of leverage, since the motivation to manage earnings is held consistent for all firms in the testing sample, rather than being random or undetermined as has been the case in prior studies.

Second, unlike previous studies, which usually use a common debt ratio to proxy for leverage, this study constructs a leverage proxy more consistent with earnings management research methodology (see, for example, the adjusted proxy by Martin 1996). Since abnormal accruals, which proxy for earnings management are normally calculated based on the universe derived industry-adjusted portfolios, the leverage proxy in this study is similarly based on the universe derived industry-matched portfolios.

The intuition presented in this study along with the related theoretical basis is discussed in more detailed in the following section.

4.3. Theoretical Framing and Hypothesis Development

This section presents a theoretical framework consisting primarily of a number of related implications of leverage on pre-merger earnings management. The framework developed here aims at providing a relevant theoretical foundation for developing the research hypothesis and the rationale behind the expected relationship between leverage and pre-merger earnings management.

4.3.1. Leverage: Basic Concepts

4.3.1.1. Definition and Measurement

The term *leverage* is used in the financial literature to refer to the firms' use of debt finance relative to its use of equity in its capital structure (Holthausen and Leftwich 1983; Lang et al. 1989; Kim and Park 2005). *Leverage* is used interchangeably with the term *gearing* in the literature (Servaes 1991). However, the term *leverage* is more often used in the US market (Lang et al. 1989).

A general approach to indicate a firm's level of leverage is to use financial ratios (such as debt ratios, gearing ratios or leverage ratios) which can be computed in different ways with sometimes different terms. These ratios are commonly constructed by dividing a debt indicator by a capital indicator (Lang et al. 1989). For example a firm's leverage can be obtained by dividing the total book value of debt by the total book value of assets (see, for example, Zeff 1978; Holthausen and Leftwich 1983; Kim and Park 2005) or by dividing the total market value of long-term debt by the total market value of equity (see, for example, Lang et al. 1989; Servaes 1991).

4.3.1.2. Why Do Firms Use Leverage?

In the absence of income tax in the perfect world of Modigliani and Miller (hereafter M&M) (1988), M&M argue that a firm's value is indifferent to the use of leverage under the assumption that *homemade leverage* (i.e. individuals can borrow on similar terms as the firms') is possible. This is known as *M&M Proposition I*, while *M&M Proposition II* states that the expected rate of return on equity increases with the greater use of leverage in obtaining more funds to invest, because the risk to shareholders increases with leverage as well.

The implication of *M&M Proposition II* is that the higher a firm's level of leverage, the more volatile or sensitive its equity returns are, which denoted in the literature by the term *financial risk* (Lang et al. 1989).

However, considering income taxes in Modigliani and Miller's model results in *tax gains* for leveraged firms because interest payments are deductable from taxable income before deducting taxes. Accordingly, a firm's value can increase by increasing its leverage, i.e. the use of debt (Stulz 1988; 2003).

4.3.1.3. What Limits the Use of Leverage?

Creating value by using leverage in the *real world* (i.e. a world with taxes) portrays the advantageous side of leverage. However, this can only remain true under certain conditions. For example, if we consider an extreme case whereby we have a firm which is 100 percent leveraged and is thus financed completely with debt, then this would only be advantageous to the firm if the the risk and costs of the increased leverage remain unchanged as leverage

increased. Miller (2010) clarifies that with increasing leverage, the shareholders incur increasing risks of financial distress along with the associated direct and indirect costs.

4.3.1.3.1. The Bankruptcy Costs of Leverage

Unlike the case of equity finance, leverage puts the firm under an "obligation" to make the interest and principal payments agreed. Failure to meet these obligations can leave the firm with the risk of financial distress up to an eventual situation of *bankruptcy*, where the ownership rights of the firm would transfer to lenders (Kim and Park 2005).

The *direct costs* of financial distress that are repeatedly explored in the literature consider the administrative and legal costs of corporate restructuring or liquidation (see, for example, Warner 1977; White 1983; Altman 1984; Weiss 1990), while the *indirect costs* of financial distress represent the damage to the business's trust and vital relationships with its suppliers, customers and creditors (see, for example, Altman 1984; Cutler and Snmmers 1988; Andrade and Kaplan 1997; Mark L 2010).

4.3.1.3.2. The Agency Costs of Leverage

In a firm with higher levels of leverage, shareholders have a lower claim on the assets of the firm such that a smaller residual equity is left at risk if the firm fails. As a result an agency problem may arise between the contracting parties, i.e. between the shareholders and the debtholders. In other words, shareholders may prefer the firm to invest in a high risk project in order to obtain higher returns while the firm's lenders have to share the extra risk burden without enjoying higher returns (Lang et al. 1989).

Agency costs, as defined by Jensen and Meckling (1976) and later by Jensen (2005, p.6), are "*the sum of the contracting, monitoring and bonding costs undertaken to reduce the costs due to conflicts of interest plus the "residual loss" that occurs because it is generally impossible to perfectly identify the agents' interests with that of the principal*."

Jensen and Meckling (1976), in their seminal paper, argue that agency costs explain how the probability distribution of a firm's cash flows is affected by its capital structure. Similarly, an analogous argument can be extended to a firm's debt contractual relationship for explaining the *agency costs of leverage* (Haugen and Senbet 1988; Copeland et al. 2000; Mark L 2010).

4.3.2. Leverage as a Determinant for the Method of Payment in M&A

An acquiring firm is implicitly faced with two options to pay to acquire its target firm. It can either offer cash or issue equity shares to the shareholders of its target.

Hansen's (1987) theory for the choice of exchange medium in M&A predicts that an acquiring firm offers cash to a target firm when its share is undervalued whereas it offers equity when its share is overvalued, based on its proprietary information.

This theory relates the acquiring firm's choice of M&A payment method to how its share is valued by the market. This view is used in explaining the incentive for pre-merger income-increasing earnings management by non-cash acquiring firms (see Erickson and Wang (1999) and the previous chapter section 3.3.1 for further discussion). However, it assumes that different methods are equally feasible and ignores any possible constraints, which may restrict the use of a particular method.

Faccio and Masulis' (2005) work develops another view on the choice of payment in M&A by suggesting that the choice between issuing debt or equity to pay in a M&A is a function of the debt-capacity of the acquiring firm. This proposition is based on the core premises of the *Pecking-Order Theory* of capital structure by Myers and Majluf (2004), which implies that a firm can only issue further debt until it encounters the potential cost of financial distress.

In other words, highly leveraged acquirers are more restricted[39] in their choice to use debt and, consequently, they may be forced to use equity shares as a financing method without enjoying the opportunity of efficiently choosing among different methods.

Therefore, it could be argued that, for a highly leveraged acquiring firm, choosing to pay with equity in M&A is more likely to be the only option it faces rather than the viewpoint of a flexible "choice" for managers to use equity when the share price is overvalued, e.g. because of earnings management. Consequently, it is expected that a highly leveraged acquiring firm has a lower chance to efficiently adopt income-increasing accounting methods before a M&A due to the firm's limited choice.

[39] Debt-capacity is not the only restriction on a highly leveraged firm, contractual clauses (i.e. debt covenants) in debt agreements may explicitly inhibit the borrowing firm from issuing further debt. In "Kim, Y. and M. S. Park (2005). "Pricing of Seasoned Equity Offers and Earnings Management." Journal of Financial and Quantitative Analysis **40**(2): 435-463." there is cited evidence that 91 percent of public debt issue in the US include contractual clauses that prohibit the borrower from issuing further debt.

4.3.3. Leverage as a Restraint for Managerial Opportunism

Jensen (1986) argues that excess amounts of free cash flow are more exposed to managerial opportunistic misuse in a setting of lower growth and fewer profitable opportunities of investment. Jensen's (1986) view is explained by agency costs and is extended in formulating the *Control Hypothesis*, which predicts that higher leverage has a mitigating effect over managerial opportunism since management's control over free cash flow is reduced.

There is a wealth of evidence (see, for example, Ke 2001; Chung et al. 2002; Chung et al. 2005; Jelinek 2007; Lee et al. 2007; Zhong et al. 2007) that supports the control hypothesis (as well as the close monitoring hypothesis in 4.3.4 below) to explain the documented negative association between leverage and earnings management. The assumption underlying their rationale is the positive link between managerial opportunism and earnings management as managers adopt income-increasing methods to mask non-value maximising (i.e. opportunistic) decisions (Christie and Zimmerman 1994; Easterwood 1997; Jelinek 2007).

4.3.4. Leverage as an Added Monitoring Mechanism

The firm's decision of agreeing to a debt contract to obtain funds implies adding a new contracting party (i.e. the lender) to the firm's existing stakeholders. Consistent with the agency theory, the *Close Lenders' Monitoring Hypothesis* by DeAngelo et al. (1994) posits that the relationship between lenders and borrowing firms is governed by the firm's accounting numbers and that lenders resultantly seek to protect their interests.

Information is asymmetric between the contracting parties in a debt contract, i.e. the borrower has information that the lender does not have access to. The level of uncertainty that the lender is exposed to is positively related to the cost of debt, given that the lender is risk averse (Stulz 1988). Close monitoring costs are incurred to protect the lender against the borrower's opportunistic attempts to take advantage of his better information and deliberately attempt to deceive the lender (Ritter 1984).

Therefore, DeAngelo et al.'s (1994) argument suggests that, in a highly leveraged (i.e. monitored) firm, managers' attempts to alter accounting numbers in order to avoid accounting-based debt covenants are unlikely to succeed consistently.

4.3.5. Leverage as a Source of Conflicting Incentives

The basic assumption underlying an earnings management hypothesis is that the economic consequences of the accounting choices made motivate firms to favour one choice over another (Jones 1991). However, the economic consequences of the accounting choice (i.e. income-increasing or income decreasing) are a result of how the reported earnings are processed differently by the different users and contracting parties, which would eventually generate different incentives for earnings management depending upon the situation considered.

Debt contracts, compensation agreements, equity offerings, political costs and insider trading are considered as sources of incentives for income-increasing earnings management (Beneish 2001; Scott 2003). A basic hypothesis underlying the Positive Accounting Theory, by Watts and Zimmerman (1986), is the debt-covenant hypothesis. This hypothesis predicts that firms

closer to violating accounting based debt-covenants are more likely to use income-increasing accounting procedures. This could be true if we assume that all other factors to be held constant as well as there being no other conflicting motivations toward adopting income-decreasing policy for the same period. Watts and Zimmerman (1986) and Jones (1991) note that the various firm's processes and the contractual and political pressures can provide managers with *conflicting incentives* when choosing among different accounting procedures.

In other words, opportunistic managers would shift reported income from a subsequent accounting period to the current accounting period in order to minimise the chance of technical fault in the current period (Scott 2003), if these managers were free from other incentives (and monitoring pressures as explained in the previous section 4.3.4) in the current period as well as the subsequent one. Having said that, the impact of earnings management is indeed *transient*, meaning that the effect of discretionary accruals on earnings of a given accounting period can have a *reversal effect* on earnings in a future one (Chung et al. 2002).

Hence, the existence of other conflicting incentives – not necessarily associated exclusively with the current period – may influence earnings management practices. Therefore, it could be argued that the creation of higher leverage levels in a firm should restrict earnings management driven by other incentives, such as a non-cash M&A.

4.3.6. Conclusion

This chapter focuses on the influence of leverage on earnings management, particularly pre-merger earnings management by acquiring firms. The testable hypothesis in this chapter is developed based on two theoretical foundations.

The first foundation relates to the proposition of the motivation for pre-merger earnings management by acquiring firms. This proposition predicts that acquiring firms have the incentive to apply upward earnings management methods before offering to pay for the M&A deal(s) using their shares (Erickson and Wang 1999; Botsari and Meeks 2008; Gong et al. 2008). The detailed discussions of this argument as well as the empirical evidence are presented in the previous chapter (see sections 3.2.2, 3.3.3 and 3.5.2).

The second theoretical foundation relates to a number of propositions including that leverage is a determinant of the payment method in a M&A (Faccio and Masulis 2005), a control of managerial opportunism (Jensen 1986), an effective external monitoring device (DeAngelo et al. 1994) and a source of conflicting incentives for earnings management (Jones 1991; Beneish 2001; Chung et al. 2002).

Therefore, it is argued in this chapter that despite the strong and evident motivation of pre-merger earnings management by non-cash acquirers, abnormally high leverage can effectively inhibit managers' ability to alter accounting earnings through adopting income-increasing methods.

Specifically, the main hypothesis in this chapter is formulated as follows:

> **Hypothesis 1**: *Pre-merger earnings management by non-cash acquiring firms is contaminated by high leverage.*

4.4. Research Methodology and Design

The objective of this study is to examine the impact of leverage on earnings management in a purposeful sample of firms that have at least a similar motivation to manage earnings upward. To achieve this objective, earnings management of a sample of acquiring firms is examined during a pre-merger period focusing on those acquirers that offer shares in their payment method to their targets (Erickson and Wang 1999; Gong et al. 2008).

Once this has been conducted, a leverage proxy is then constructed in order to investigate its hypothesised effect on the magnitude of acquirers' pre-merger earnings management. Two methods are employed in this study to test the leverage effect on earnings management. First, in a sample splitting univariate analysis, earnings management is examined for subsamples which are formed based on the scale of their leverage to explore earnings management differences between firms characterised by high and low leverage. Second, the relationship between leverage and earnings management is tested in a linear regression model for the collected observations after controlling for other intervening factors.

In section 4.4.1, the sampling procedure is explained. Section 4.4.2 explains the research methods used to achieve the objective of this study and section 4.4.3 defines the variables employed.

4.4.1. Sample Construction

Unlike previous studies that investigate unstructured samples of firms with unclear or undefined motives for earnings management, the objective of this research is to examine the

leverage effect on earnings management by a structured sample of firms that have a determined motivation to manage earnings.

The control for the earnings management incentive is achieved by constructing a purposeful sample of firms. Therefore, a sample of non-cash acquiring firms in their pre-merger period is considered to measure their discretionary accruals and then to examine the impact of leverage on the magnitude of earnings management.

A sample of US acquiring firms is taken from *Thomson One Banker* according to the following criteria:

1. The acquiring firm belongs to a M&A deal announced between 01/01/1999 and 12/31/2008.[40]
2. The merger and acquisition deal is completed.
3. The acquiring firms and their respective targets are both publicly listed companies to mitigate variation in information asymmetry and motives in managing earnings (Baik et al. 2007).
4. Acquiring firms from the financial sector, which have SIC codes between 6000 and 6999, are excluded from the sample. This is a common practice in the literature as this sector is subject to special regulations (see, for example, Erickson and Wang 1999; Gong et al. 2008).

[40] The sampling period cut-off point (31/12/2008) is determined once data collection for this study started in the beginning of 2009. The ten years period is chosen as an ad hoc sampling period.

5. The deal value is at least $1 million to exclude all deals of negligible sizes. The purpose of this procedure is to discard firms with lower motivation to manage earnings due to the insignificant economic motivation (Erickson and Wang 1999).
6. The acquiring firm obtains a controlling ownership interest in the deal (i.e. the acquirer owned less than 50 percent before the transaction and greater than 50 percent by completing the deal).

A total of 661 firms meet the criteria and have earnings management and other needed data available on *Compustat*. Of them, 417 acquiring firms use their equity shares in financing the M&A deals. Section 4.5.1 provides a detailed descriptive analysis of the research sample.

4.4.2. Methods

4.4.2.1. Univariate Analysis: Sample Partitioning

The objective of the univariate analysis conducted is to test the magnitude, the sign and the significance of the earnings management proxies in subsamples partitioned according to the observations' rank of leverage. The tests include parametric tests as well as non-parametric tests, where no assumptions are made regarding the population's probability distribution from which the observations are selected, are employed for robustness (Gujarati 2004).

The sample partitioning approach is useful for observing the behaviour of earnings management in subsamples with discrepancies in the level of leverage. Earnings management by acquirers is tested for the past three quarters prior to the M&A deal announcement.[41]

Because univariate analysis is normally subject to higher likelihood of bias due to omitted factors (Stock and Watson 2007), the outcome of this method is backed by a further multiple regression analysis, as illustrated in the following section.

4.4.2.2. Linear Multiple Regression Analysis

A linear multiple regression model is proposed in order to analyse the leverage effect on pre-merger earnings management using the ordinary least squares method after holding three control variables constant (Stock and Watson 2007). More specifically, this analysis focuses on testing the slope coefficient (β_1) of the leverage proxy (*LEVi*) as shown in equation (4.1):

$$EM_i = \beta_0 + \beta_1 LEV_i + \beta_2 RSIZE_i + \beta_3 CASH_i + \beta_4 SOX_i + \varepsilon_i \quad (4.1)$$

Where the dependent variable:

EM: indicates pre-merger earnings management by the acquiring firm,

LEV: represents the leverage proxy measured as the industry-adjusted debt to equity ratio,

RSIZE: indicates the relative size of the deal,

[41] Based on the findings of Chapter 3, acquirers' abnormal accruals are most evident up to three quarters prior to deal's announcement (See section 3.5.2).

CASH: is a dummy variable that indicates the payment method of the deal. It takes 1 if the deal was paid completely in cash, and 0 otherwise,

SOX: is a dummy variable that indicates whether the deal was announced in Sarbanes-Oxley (SOX) era. It takes 1 if the M&A deal was announced after in post-SOX era, and 0 otherwise,

ε: denotes the residual term of the regression model, and

i: denotes the acquiring firms index.

In a further analysis, as shown in equation (4.2), LEV_i is replaced by a splitter dummy variable ($HDLD_i$), which takes 1 if the acquirer's leverage proxy is above sample median and 0 otherwise, and an interaction term ($CASH_i$* $HDLD_i$) is added to the model to capture the potential multiplicative effect of leverage in non-cash deals (Gujarati 2004).

$$EM_i = \beta_0 + \beta_1 HDLD_i + \beta_2 RSIZE_i + \beta_3 CASH_i + \beta_4 SOX_i + \beta_5 HDLD_i \times CASH_i + \varepsilon_i \qquad (4.2)$$

4.4.3. Variables Measurement

4.4.3.1. The Dependent Variable (EM_i)

The dependent variable here is defined as the signed value of the cumulative abnormal accruals over the last three quarters prior to announcement date. The previous chapter documented evidence that acquiring firms manage their earnings up to three quarters prior to the deal's announcement date (see section 3.5.2). For this reason, this chapter focuses on the

abnormal accruals calculated in the last three quarterly statements issued by the acquiring firm before it announced the respective M&A deal.

McNichols (2000) found that highly profitable firms have higher discretionary accruals. However, the profitability effect is not controlled for at this stage since the study's methodology of calculating abnormal accruals is similar to Kothari et al.'s (2005). This approach already considers the profitability effect as the expected accruals are determined based on the Dechow et al's (1995) modified Jones (1991) model in a cross-sectional estimation for the industry-performance matched portfolios in each quarter, following Louis (2004) and Gong et al. (2008).

Detailed discussion about the methodology of estimating the abnormal accruals is provided earlier in the previous chapter sections 3.4.1 and 3.4.2.

4.4.3.2. The Independent Variable (LEV_i)

Besides being an indicator of capital structure, the firm's level of leverage is typically used in the literature to capture the consequences of debt contracting (Holthausen and Leftwich 1983; Beneish 2001; Jelinek 2007), the magnitude of accounting-based contractual covenants (DeAngelo et al. 1994), the rigidity of general debt provisions (Press and Weintrop 1990; DeFond and Jiambalvo 1994; Ke 2001; Jaggi and Picheng 2002; Richardson et al. 2002) or the controlling and monitoring pressure that can be created by lenders (Chung et al. 2002; Chung et al. 2005; Peasnell et al. 2005; Zhong et al. 2007).

Yet, the corporate finance literature has not thus far agreed upon a single leverage proxy (see section 4.3.1.1). D'Mello and Farhat (2008) advise that different leverage proxies may lead to

different empirical results. Therefore, consideration of the peculiarity of the different research designs while constructing the leverage proxy is vital for the reliability of this chapter's discussions.

Given the nature of the sample in this study (i.e. it is an event-based sample), it could be argued that an industry-adjusted leverage proxy may provide more reliable results than other approaches (Martin 1996). Bradley et al. (1984) present evidence that debt ratios differ remarkably among industry sectors. Even those researchers which debate the optimal capital structure[42] of firms fail to disagree that this cannot be determined without taking the industry into consideration (Holthausen and Leftwich 1983). Correspondingly, practitioners hold a similar view with CFOs, as surveyed by Graham and Harvey (2001), showing that industry-wide leverage ratios do significantly influence firms' financing decisions.

The leverage proxy construction in this study is primarily motivated by the intuition of Fama and French (1997) who reason that the optimal leverage ratio varies over time and industry. Therefore, the method adopted for calculating LEV_i is somehow analogous to the approach of matched portfolios in estimating the abnormal accruals.

Using the *Compustat* universe of firms, the average debt-to-equity ratio is first calculated per industry in each year over the ten-year sampling range. Then, LEV_i is obtained for each acquiring firm by weighing its debt-to-equity ratio against the industry average in the same

[42] The optimal capital structure is usually recognised as the capital structure that contains an ideal portion of debt at which the weighted average cost of capital is at its minimum level (Ross et al. 2005).

year during which the M&A deal is announced. It is this measure which we use to capture the level of leverage for each acquirer.

4.4.3.3. The Control Variables

4.4.3.3.1. The Relative Size ($RSIZE_i$):

The relative size of the deal is measured by relating the book value of total assets of the target to the book value of total assets of the acquirer. Recalling the findings of Erickson and Wang (1999) and Baik et al. (2007), the larger the deal, the higher the magnitude of abnormal accruals. This is explained by the increased motivation to manage earnings due to the increased potential economic benefits as proxied by the deal's size.

4.4.3.3.2. Sarbanes-Oxley Act 2002 (SOX_i):

Controlling for Sarbanes-Oxley Act 2002[43] (SOX) effect is relevant in this study for, at least, two main reasons. First, the reliability in financial reports is perceived as higher since SOX was enforced (Rittenberg and Miller 2005) and this is found to affect the metrics of event-specific earnings management[44], and second, there is substantial evidence that M&A candidates started to rely heavily on financial and legal advisors since SOX came into effect (Madura and Ngo 2010), which could impact also pressure managements' decisions regarding discretionary accruals.

[43] The purpose and the implications of Sarbanes-Oxley Act 2002 are taken into detailed discussion in Chapter 3 (see section 3.3.4).

[44] The evidence on this issue is documented in Chapter 3 (see sections 3.3.4.2 and 3.6).

4.5. Results

4.5.1. Descriptive Statistics

In Panel A of Table 4.1, the sample distribution by year shows that merger deals peaked in 2000 with 111 acquirers centred in this year. In contrast, there is the lowest volume of mergers undertaken in 2008 with only 32 observations. From the total sample, 244 acquirers (36.9 percent) pay their targets using only cash, while 417 acquirers (63.1 percent) use equity to totally or partially pay for the M&A deal. As explained later, non-cash acquirers are subsampled for further analysis since pre-merger earnings management is not evident nor theoretically supported for cash acquiring firms. Stratifying the sample by industry, Panel B of Table 4.1 shows that the total sample of acquirers is distributed across a range of five main industry divisions representing 31 major groups.

The overwhelming majority (80.48 percent) of the total acquirers studied can be represented by two key industry divisions - Manufacturing and Services. While the manufacturing industry division (SIC 2000-3999) represents 50.68 percent of the total sample, the services industry division (SIC 7000-8999) accounts for 29.80 percent. Consideration of the major industrial groups shows that four classifications cover 59.76 of the total sample. Namely, they include chemicals (SIC 2800-2899) with 75 acquirers (11.35 percent), electronics (SIC 3600-3699) with 85 acquirers (12.86 percent), instruments (SIC 3800-3899) with 71 acquirers (10.74 percent) and business services (SIC 7300-7399) with 164 acquirers (24.81 percent).

Table 4.1 Sample characteristics

The following table presents, in Panel A, the distribution of the overall sample by year in which the deal was announced. The final sample of overall acquirers comprises 661 firms between 1999 and 2008 inclusive. The sample was initially selected from *Thomson One Banker* then we require that sample firms have accounting data on *Compustat*. The following table also shows, in Panel B, how the sample is distributed on industry sector divisions and major groups, according to acquirers' SIC. Moreover, the following table presents the distribution of the sample by the method of payment used in the respective deal.

Panel A: Distribution of acquirers by year and payment method

	Total		Non-cash acquirers		Cash acquirers	
	Freq.	*%*	*Freq.*	*%*	*Freq.*	*%*
1999	68	10.3	52	12.5	16	6.6
2000	111	16.8	80	19.2	31	12.7
2001	97	14.7	68	16.3	29	11.9
2002	62	9.4	36	8.6	26	10.7
2003	62	9.4	39	9.4	23	9.4
2004	57	8.6	36	8.6	21	8.6
2005	62	9.4	34	8.2	28	11.5
2006	55	8.3	25	6.0	30	12.3
2007	55	8.3	30	7.2	25	10.2
2008	32	4.8	17	4.1	15	6.1
Total	661	100	417	100	244	100

Panel B: Distribution of acquirers by industry

		Total		Non-cash acquirers		Cash acquirers	
SIC	Industry Div. & Major Group	*Freq.*	*%*	*Freq.*	*%*	*Freq.*	*%*
10-14	Mining	47	7.11	38	9.11	9	3.69
10	Metal mining	5	0.76	5	1.2	0	0
13	Oil & gas extraction	42	6.35	33	7.91	9	3.69
20-39	Manufacturing	533	50.68	191	45.80	144	59.01
20	Food & kindred products	15	2.27	5	1.2	10	4.1
21	Tobacco products	1	0.15	1	0.24	0	0
25	Furniture & fixtures	1	0.15	0	0	1	0.41
26	Paper & allied products	1	0.15	1	0.24	0	0
27	Printing & publishing	1	0.15	0	0	1	0.41
28	Chemicals & allied products	75	11.35	50	11.99	25	10.25

Cont'd Table 4.1

32	Stone, clay & glass products	1	0.15	1	0.24	0	0
33	Primary metal industries	7	1.06	3	0.72	4	1.64
34	Fabricated metal products	6	0.91	3	0.72	3	1.23
35	Industrial machinery & equip.	59	8.93	28	6.71	31	12.7
36	Electronic & other elec. equip.	85	12.86	56	13.43	29	11.89
37	Transportation equipment	11	1.66	3	0.72	8	3.28
38	Instruments & related products	71	10.74	40	9.59	31	12.7
39	Misc. manufacturing industries	1	0.15	0	0	1	0.41
40-49	Transportation, Communications, Electric, Gas and Sanitary Services	59	8.93	40	9.60	19	7.79
42	Trucking and warehousing	3	0.45	1	0.24	2	0.82
48	Communications	45	6.81	33	7.91	12	4.92
49	Electric, gas & sanitary services	11	1.66	6	1.44	5	2.05
50-59	Retail Trade	22	3.33	13	3.12	9	3.69
50	Wholesale trade-durable goods	6	0.91	5	1.2	1	0.41
51	Wholesale trade-nondurables	1	0.15	1	0.24	0	0
54	Food stores	1	0.15	1	0.24	0	0
58	Eating & drinking places	1	0.15	0	0	1	0.41
59	Miscellaneous retail	13	1.97	6	1.44	7	2.87
70-89	Services	197	29.80	134	37.84	63	25.82
70	Hotels & other lodging places	1	0.15	1	0.24	0	0
73	Business services	164	24.81	113	27.1	51	20.9
78	Motion pictures	3	0.45	1	0.24	2	0.82
79	Amusement & recreation serv.	3	0.45	2	0.48	1	0.41
80	Health services	11	1.66	6	1.44	5	2.05
87	Engineering & mgt. service	16	2.42	16	3.84	4	1.64
Total		661	100	417	100	244	100

Table 4.2 Descriptive statistics

The following table presents the descriptive statistics for the overall sample (661 acquirers) and sub-samples (cash acquirers of 244 and non-cash acquirers of 417). Panel A of the following table reports the results for all acquirers aggregated, and the results of acquirers by method of payment used in the respective deal. Panel B reports the descriptive statistics for the 417 non-cash acquirers in a more detailed analysis, where non-cash acquirers are segregated into Low and High Leverage based on their industry-adjusted leverage proxy rank in the sample. Total assets, Total sales and Deal value are in million USD. Return on equity is net income divided by book value of total shareholders' equity. Debt to equity ratio is total liabilities divided by book value of total shareholders' equity. Ind-adj leverage is debt to equity ratio of acquirer divided by industry-average debt to equity using universe firms in the year of deal announcement.

Panel A: Descriptive statistics of all acquirers by payment method

	Total			Non-cash acquirers			Cash acquirers		
	(N = 661)			*(N=417)*			*(N=244)*		
	Mean	*Median*	*STD*	*Mean*	*Median*	*STD*	*Mean*	*Median*	*STD*
Total assets	9014.4	1269.3	27574.5	7333.9	834.7	30261.1	11891.2	2427.3	21998.9
Total sales	5806.2	856.2	12946.1	4053.2	491.0	11269.9	8799.7	2008.2	14949.2
Deal value	1543.1	227.0	5661.9	2042.4	259.7	7007.3	689.7	189.9	1359.9
Relative size	0.1712	0.1788	0.2053	0.2785	0.3111	0.2316	0.0580	0.0782	0.0618
Return on equity	-0.0504	0.0449	0.7564	-0.1159	0.0268	0.9432	0.0608	0.0687	0.1255
Debt to equity	0.4390	0.4241	0.2612	0.4387	0.3972	0.2955	0.4395	0.4550	0.1900
Ind-adj. leverage	0.2922	0.1886	0.2824	0.2900	0.1790	0.2873	0.2960	0.2135	0.2744

Cont'd Table 4.2

Panel B: Descriptive statistics of non-cash acquirers by Low-High leverage

	Total			Low Leverage			High Leverage		
	(N=417)			*(N=209)*			*(N=208)*		
	Mean	Median	STD	Mean	Median	STD	Mean	Median	STD
Total assets	7333.9	834.7	30261.1	2700.4	370.9	6981.8	12453.9	1592.4	42984.1
Total sales	4053.2	491.0	11269.9	1799.3	203.5	4920.4	6538.7	929.9	15213.3
Deal value	2042.4	259.7	7007.3	1284.0	162.3	4849.6	2816.1	460.9	8785.4
Relative size	0.2785	0.3111	0.2316	0.4755	0.4376	0.6946	0.2261	0.2894	0.2044
Return on equity	-0.1159	0.0268	0.9432	-0.1971	0.0116	1.2779	-0.0271	0.0318	0.2559
Debt to equity	0.4387	0.3972	0.2955	0.3218	0.2724	0.2064	0.5673	0.5361	0.3252
Ind-adj. leverage	0.2900	0.1790	0.2873	0.0848	0.0770	0.0496	0.5157	0.4336	0.2709

The descriptive statistics provided in Table 4.2 present a comparison of the acquirers' characteristics by method of payment for the total sample as well as by the level of leverage for the non-cash acquirers' sample.

Panel A of Table 4.2 shows that cash acquirers in general are larger in both size and sales when compared to non-cash acquirers. The statistics show that the mean book value of total assets (total sales) of the cash acquirers is $11.891 billion ($8.799 billion), compared to $7.333 billion ($4.053 billion) for the non-cash acquirers, with an average of $9.014 billion ($5.806 billion) for the overall sample. Unsurprisingly, cash deals have a mean dollar value of $689.7 million and mean relative value of 5.80 percent, which make them not as sizeable as those financed using equity or mixed method, which have a mean dollar value of $2.042 billion and a mean relative value of 27.85 percent. Non-cash acquirers are, on average, less profitable with a negative mean ROE of -11.59 percent as compared with cash acquirers (6.08 percent) while both samples have nearly the same mean debt to equity ratio of 43.9 percent. From Panel A of Table 4.2 the mean values of the industry-adjusted leverage for both cash and non-cash acquirers do not appear significantly different (28.24 and 29.60 percent, respectively).

Panel B of Table 4.2 focuses exclusively on non-cash acquirers, which are further split into low and high leverage firms with respect to their industries. The splitting procedure is based on the sample's median value of the firms' industry-adjusted leverage. The mean (median) value of the *Industry-Adjusted Leverage* for the low-leverage (hereafter LD) subsample is 8.48 percent (7.70 percent) whereas it is 51.57 percent (43.36 percent) for the high-leverage (hereafter HD) subsample. On average, non-cash acquirers with HD are of a larger size with a mean total assets (total sales) of $12.453 billion ($6.538 billion). This is compared with LD

ones which have a mean total assets (total sales) of $2.700 billion ($1.799 billion). This explains why the mean (median) relative size of deals in HD subsample is only 22.61 percent (28.94 percent) which is in stark contrast to the mean (median) relative size of deals in the LD subsample, which is 47.55 percent (43.76 percent). This is further supported by the fact that the mean (median) absolute dollar value of deals in HD is $2.81 billion ($460.6 million), which far exceeds the mean (median) absolute dollar value of deals in LD that is only $1.284 billion ($162.3 million).

4.5.2. Results of Univariate Analysis: Sample Partitioning

4.5.2.1. Results of Partitioned Sample by the Method of Payment

It can be argued that acquirers would not be motivated to manage their earnings prior to a merger if their targets were offered purely cash (Erickson and Wang 1999; Asano et al. 2007; Baik et al. 2007; Botsari and Meeks 2008). On the grounds of this argument, which can be supported by the empirical evidence as obtained in Chapter 3 (see sections 3.5.2.1 and 3.5.2.2), and after testing the aggregate sample of acquirers, cash acquirers are withdrawn from the experiment sample to form a subsample that is used as a control group. In other words, earnings management measures are examined for the total sample (661 firms) as well as for cash (244 firms) and non-cash acquirers (417 firms) separately before proceeding to the next level in analysis.

Using the t-test method for testing the mean and the Wilcoxon-z test for testing the median in Table 4.3, it is noticed that for the total sample all coefficients of abnormal accruals are positive for the three examined quarters, with robust significance at quarter t_{-2}. More

importantly, the cumulative abnormal accruals over the three pre-merger periods have a positive mean (median) value of 0.8589 percent (0.1133 percent) significant at a 5 percent (10 percent) confidence interval, indicating robust evidence of pre-merger income-increasing earnings management.

Table 4.3 Abnormal accruals of the total sample by method of payment

The following table presents mean and median abnormal accruals percentages for acquirers over three quarters preceding the deal's announcement date. Abnormal accruals are calculated using industry-performance-matched abnormal accruals models. The table demonstrates the results of t-test and Wilcoxon-Z test in parentheses. The tests were applied for mean and median values, respectively. The results are shown for the overall sample of acquirers and for each sub-sample by the method of payment. The symbols (*), (**) and (***) denote confidence interval of 10, 5 and 1 percent, respectively, in two-tailed test.

	Total *(N = 661)*		Non-cash acquirers *(N=417)*		Cash acquirers *(N=244)*	
Abnormal Accruals	Mean *(t-value)*	Median *(Wilcoxon-Z)*	Mean *(t-value)*	Median *(Wilcoxon-Z)*	Mean *(t-value)*	Median *(Wilcoxon-Z)*
Quarter $_{t-1}$	0.3224	0.0578	0.3941	0.0578	0.0479	0.0469
	(1.53)	*(0.967)*	*(1.36)*	*(1.306)*	*(0.14)*	*(0.232)*
Quarter $_{t-2}$	0.3952**	0.0526*	0.5246*	0.0525**	0.0849	-0.054
	(1.96)	*(1.767)*	*(1.82)*	*(2.146)*	*(0.31)*	*(-0.110)*
Quarter $_{t-3}$	0.1772	0.0563	0.3101	0.0563	0.1118	-0.017
	(0.76)	*(0.781)*	*(0.91)*	*(1.106)*	*(0.37)*	*(-0.241)*
Cumulative	0.8589**	0.1133*	1.1378**	0.1132	0.2796	-0.717
	(2.20)	*(1.91)*	*(2.07)*	*(0.405)*	*(0.53)*	*(-0.758)*

Expectedly, evidence holds only for the subsample of non-cash acquirers providing a positive mean of 1.1378 percent significance at 5 percent confidence interval, after splitting the overall sample by the method of payment. The subsample of cash acquirers does not show successful attempts of earnings management since they lack the motivating incentives to aggressively report higher accruals than normal.

The evidence of earnings management reported for the total sample seems to be driven by the abnormally high discretionary accruals of non-cash acquirers included in the total sample, as noted in the previous chapter section 3.5.2.2. The findings so far reveal that the dataset used here produces expected and consistent results with the literature before progressing to the next level of analysis in this study.

4.5.2.2. Results of Partitioned Sample by the Level of Leverage

Proposing that leverage may influence managerial decision making, including those pertaining to the firm's accounting policy, acquiring firms with higher rates of leverage as compared to their industry peers may be less capable of managing the pre-merger earnings unreservedly despite the M&A incentives (Jensen 1986; Jones 1991; DeAngelo et al. 1994; Beneish 2001; Chung et al. 2002).

To investigate the extent to which abnormal accruals are affected by leverage, the observations of the total sample are partitioned into LD and HD subsamples based on the median of *Industry-Adjusted Leverage*, as presented in Table 4.4. Interestingly, very significant evidence of upward earnings management is found only in the LD subsample. From Table 4.4, the mean values of the abnormal accruals over the three premerger quarters t_{-1}, t_{-2} and t_{-3} are positive (0.667, 0.9128 and 0.4936 percent, respectively) and significant at 10, 1 and 10 percent confidence interval levels respectively.

Table 4.4 Abnormal accruals of total sample by level of leverage

The following table presents mean and median abnormal accruals percent for acquirers over three quarters preceding the deal's announcement date. Abnormal accruals are calculated using industry-performance-matched abnormal accruals model. The overall sample is subdivided in this table into low (*LD*) and high leverage (*HD*) based on the acquirers' rank in the sample with respect to the industry-adjusted leverage ratio. The table demonstrates the results of t-test and Wilcoxon-Z test in parentheses. The tests were applied for mean and median values, respectively. The symbols (*), (**) and (***) denote confidence interval of 10, 5 and 1 percent, respectively, in two-tailed test.

	LD *(N=331)*		*HD* *(N=330)*	
Abnormal Accruals	Mean *(t-value)*	Median *(Wilcoxon-Z)*	Mean *(t-value)*	Median *(Wilcoxon-Z)*
Quarter $_{t-1}$	0.667* *(1.88)*	-0.0662 *(0.956)*	-0.088 *(-0.3)*	0.0735 *(-0.055)*
Quarter $_{t-2}$	0.9128*** *(3.13)*	0.1486* *(1.669)*	-0.281 *(-0.91)*	0.053 *(-0.548)*
Quarter $_{t-3}$	0.4936* *(1.66)*	0.0074 *(0.361)*	0.0604 *(0.15)*	0.0585 *(-0.871)*
Cumulative	1.9848*** *(3.41)*	0.426** *(2.522)*	-0.433 *(-0.759)*	0.0620 *(-0.280)*

The mean value of the cumulative abnormal accruals (1.9848 percent) of the LD subsample shows significance at the 1 percent confidence interval level indicating very significant evidence of pre-merger earnings management undertaken by low-leveraged acquirers with a robust positive median of 0.426 percent (significant at 5 percent in Wilcoxon-z test).

However, of the total acquirers the HD subsample does not indicate any evidence of managerial attempts to inflate accruals before the announcement of M&A, since none of the mean values of abnormal accruals over the three pre-merger quarters is significant[45].

4.5.2.3. Results of Partitioned Sample by Interacting the Method of Payment with the Level of Leverage

Closer examination of the behaviour of the subsamples is provided within Table 4.5, which interacts the method of payment (cash vs. non-cash) with the leverage level (LD vs. HD) of the acquiring firm for the sample partitioning procedure. Indeed, this interaction adds more depth to the analysis of earnings management shown in the previous two sections.

Interestingly, the results in Table 4.5 indicate that the LD subsample from the non-cash acquirers dataset exclusively reveals strong evidence of positive earnings management among other subsamples. In this subsample, the mean values of abnormal accruals are positive for all three quarters t_{-1}, t_{-2} and t_{-3} (0.973, 1.2537 and 0.9903 percent, respectively) and are significant at the confidence interval levels 5, 1 and 5 percent, respectively. The mean value of the cumulative abnormal accruals is very significant at the 1 percent confidence interval level with a robust positive median of 0.9903 percent, which is very significant at the 1 percent confidence interval in the Wilcoxon-z test.

[45] The analysis is repeated stratifying the sample into quartiles based on the industry-adjusted leverage of observations. Positive earnings management evidence is found in each of bottom quartile and low-mid quartile, which together are equivalent to LD subsample, whose mean values of cumulative abnormal accruals are 2.657 percent (t-value=2.93) and 1.343 (t-value=1.81), respectively. Whereas, no evidence found in any of high-mid or top quartile, which together are equivalent to HD subsample. Therefore, the inferences do not change for both cash and non-cash subsamples in quartile stratification.

Table 4.5 Abnormal accruals by level of leverage vs. method of payment

The following table presents mean and median abnormal accruals percent for acquirers over three quarters preceding the deal's announcement date. Abnormal accruals are calculated using industry-performance-matched abnormal accruals model. The table reports results per payment method sub-samples after subdividing the overall sample into low (*LD*) and high leverage (*HD*) based on the acquirers' rank in the sample with respect to the industry-adjusted leverage ratio. The table demonstrates the results of t-test and Wilcoxon-Z test in parentheses. The tests were applied for mean and median values, respectively. The symbols (*), (**) and (***) denote confidence interval of 10, 5 and 1 percent, respectively, in two-tailed test.

	LD				*HD*			
	Non-cash acquirers *(N=232)*		Cash acquirers *(N=99)*		Non-cash acquirers *(N=185)*		Cash acquirers *(N=145)*	
Abnormal Accruals	Mean *(t-value)*	Median *(Wilcoxon-Z)*	Mean *(t-value)*	Median *(Wilcoxon-Z)*	Mean *(t-value)*	Median *(Wilcoxon-Z)*	Mean *(t-value)*	Median *(Wilcoxon-Z)*
Quarter $_{t-1}$	0.973**	0.090	0.0241	-0.499	-0.214	-0.0246	0.1603	0.2580
	(2.09)	*(1.526)*	*(0.05)*	*(0.667)*	*(-0.6)*	*(0.141)*	*(0.31)*	*(0.074)*
Quarter $_{t-2}$	1.2537***	0.5514**	0.2351	-0.3475	-0.461	-0.1242	0.0503	0.4362
	(3.15)	*(2.55)*	*(0.66)*	*(-0.995)*	*(-1.12)*	*(0.199)*	*(0.11)*	*(1.218)*
Quarter $_{t-3}$	0.9903**	0.1012	-0.513	-0.0765	-0.357	0.0687	0.7693	0.0220
	(2.59)	*(0.874)*	*(-1.16)*	*(0.701)*	*(-0.63)*	*(0.612)*	*(0.79)*	*(0.621)*
Cumulative	3.0281***	0.9903***	-0.339	-0.7654	-1.317*	-0.1550	1.137	0.5752
	(4.02)	*(3.605)*	*(-0.43)*	*(-1.277)*	*(-1.67)*	*(0.191)*	*(1.53)*	*(0.798)*

No evidence is found relating to income-increasing earnings management at any quarter prior to the deal announcement for either the LD or HD subsamples of cash acquirers, or for the HD subsample of non-cash acquirers. As an additional robustness check, the analysis was repeated after redefining LD and HD according to the mean value, instead of the median value, of the industry-adjusted leverage. The results of the univariate analysis continue to hold.

Finally, it is observed that the magnitude (as indicated by either the mean or median) and the significance (as indicated by either the t-test or the Wilcoxon-z test) of the abnormal accruals for all pre-merger quarters are greater in the LD subsample of non-cash acquirers when

compared to the LD subsample of the total acquirers. This finding is consistent with, and reinforces, what is documented in the previous chapter (see section 3.5.2.2) on the relevance and importance of implementing the partitioning procedure based on the payment method when examining pre-merger earnings management.

4.5.3. Results of Multiple Regression Analysis

The results of the multiple regression analysis are presented in two tables. While Table 4.6 reports the regression results from estimating the model using the total sample of acquirers, Table 4.7 reports the results after splitting the sample of acquirers with respect to the method of payment.

The preliminary findings from the univariate analysis in the previous section put forward two main points - cash acquirers do not engage in earnings management while low-leveraged acquirers are more likely to manage earnings upward than highly leveraged ones. Therefore, it is not surprising that the multiple regression model fails to predict a significant relationship (the adjusted-r squared is either too low or negative) if a subsample of cash acquirers is used to estimate the model as shown under the four regressions of "Cash acquirers" in Table 4.7, where neither *F-statistic* nor any of the independent variables' coefficients are statistically significant.

Table 4.6 Regression analysis for the total sample of acquirers

The following table presents the results of ordinary least squares regressions of acquirers' pre-merger cumulative abnormal accruals. EM_i is calculated using industry-performance-matched abnormal accruals model for the last three quarters before M&A announcement date. $HDLD_i$ is a dummy variable that takes 1 if the acquirer has industry-adjusted leverage ratio above sample median and 0 otherwise, $CASH_i$ is a dummy variable that takes 1 if the acquirer offered cash to finance the deal and 0 if shares were included in the offer, $CASH_i$*$HDLD_i$ is a binary interaction term that takes 1 the acquirer was non-cash and ranked as low-leveraged in the sample and 0 otherwise, LEV_i is the acquirer's industry-adjusted leverage ratio, $RSIZE_i$ is the relative size of the deal measured by relating the book value of total assets of the target to the book value of total assets of the acquirer and SOX_i is a dummy variable that takes 1 if the deal was announced in the post Sarbanes-Oxley era and 0 otherwise. Numbers in parentheses represent *t-values* in two-tailed tests. The symbols (*), (**) and (***) denote confidence interval of 10, 5 and 1 percent, respectively.

	Total sample						
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*
Constant	1.514**	0.821	0.141	2.462***	1.606**	0.400	0.849
	(2.62)	*(-1.12)*	*(0.17)*	*(3.62)*	*(2.06)*	*(0.47)*	*(0.99)*
LEV_i	-2.238	-2.555*	-2.554*				
	(-1.63)	*(-1.85)*	*(-1.86)*				
$RSIZE_i$		1.9529**	1.857**		1.853**	1.739**	1.738**
		(2.41)	*(2.30)*		*(2.33)*	*(2.17)*	*(2.19)*
$CASH_i$		-0.1447	-0.287	-2.217*	-1.959	-0.263	-2.470*
		(-0.16)	*(-0.31)*	*(-1.8)*	*(-1.55)*	*(-0.28)*	*(-1.92)*
SOX_i			1.430*			1.346*	1.733**
			(1.71)			*(1.63)*	*(2.05)*
$HDLD_i$				-3.055***	-3.276***	-1.977**	-3.428***
				(-3.01)	*(-3.22)*	*(-2.37)*	*(-3.37)*
$CASH_i$ *$HDLD_i$				3.362*	3.743**		4.423**
				(1.92)	*(2.12)*		*(2.47)*
N	661	661	661	661	661	661	661
F-statistic	2.66	3.08**	3.05**	3.24**	4.09***	3.60***	4.14***
P-value	*0.1034*	*0.0276*	*0.0172*	*0.022*	*0.0029*	*0.0068*	*0.0011*
Adj R^2	0.0042	0.0158	0.0206	0.0166	0.0309	0.0261	0.0389

Likewise, regression (1) in Table 4.6 shows weak results when the total sample is tested, when either splitting non-cash acquirers in a separate sample or by including $CASH_i$, a dummy variable to indicate payment method.

However, after having the dummy variable $CASH_i$ included in the model when the regression is run for the total sample in regressions (2) to (7) in Table 4.6, better results are produced in terms of statistical significance of the model and its parameters' coefficients as well as in terms of the goodness of fit as presented in Table 4.6. The negative sign of the estimated coefficient of the leverage proxy (LEV_i) in regressions (2) and (3), -2.555 and -2.554 respectively, are both significant with a P-value of less than 10 percent, suggesting significant evidence on the inverse relationship between leverage and pre-merger earnings management exists even after controlling for the relative size of the deal and the effects of SOX. This inference holds after replacing LEV_i with a top/bottom leverage dummy ($HDLD_i$) that takes 1 if the acquirer's leverage proxy is above the sample median as presented under regression (6) in Table 4.6.

In a more focused analysis, the regression model is estimated after excluding cash acquirers from the total sample. The results again reveal very significant evidence on the negative relation between earnings management and leverage as reported under the "Non-cash acquirers" section in Table 4.7, where the estimated coefficient of LEV_i (-4.265 with P-value < 5percent) in regression (1) remains robust (-4.775 with P-value < 1 percent and -5.158 with P-value<1 percent) after controlling for both the relative size of the deal and the effects of SOX in regressions (2) and (3), respectively.

Table 4.7 Regression analysis by method of payment

The following table presents the results of ordinary least squares regressions of acquirers' premerger cumulative abnormal accruals, which are calculated using industry-performance-matched abnormal accruals model. The table reports results per payment method sub-samples. $HDLD_i$ is a dummy variable that takes 1 if the acquirer has industry-adjusted leverage ratio above sample median and 0 otherwise, $CASH_i$ is a dummy variable that takes 1 if the acquirer offered cash to finance the deal and 0 if shares were included in the offer, $CASH_i*HDLD_i$ is a binary interaction term that takes 1 the acquirer was non-cash and ranked as low-leveraged in the sample and 0 otherwise, LEV_i is the acquirer's industry-adjusted leverage ratio, $RSIZE_i$ is the relative size of the deal measured by relating the book value of total assets of the target to the book value of total assets of the acquirer and SOX_i is a dummy variable that takes 1 if the deal was announced in the post Sarbanes-Oxley era and 0 otherwise. Numbers in parentheses represent *t-values* in two-tailed tests. The symbols (*), (**) and (***) denote confidence interval of 10, 5 and 1 percent, respectively.

	Non-cash acquirers				Cash acquirers			
	(1)	*(2)*	*(3)*	*(4)*	*(1)*	*(2)*	*(3)*	*(4)*
Constant	2.291***	1.399*	0.4115	0.606	-0.260	-0.645	-1.173	-0.739
	(3.02)	*(-1.72)*	*(0.42)*	*(0.61)*	*(-0.33)*	*(-0.8)*	*(-1.09)*	*(-0.64)*
LEV_i	-4.265**	-4.775***	-5.158***		2.120	2.319	2.673	
	(-2.33)	*(-2.62)*	*(-2.79)*		*(1.16)*	*(-1.28)*	*(1.42)*	
$RSIZE_i$		2.05**	1.956**	1.764*		0.644	0.242	1.272
		(-2.24)	*(2.14)*	*(1.95)*		*(-0.25)*	*(0.09)*	*(0.51)*
SOX_i			2.244**	2.222**			0.825	0.639
			(1.99)	*(1.98)*			*(0.74)*	*(0.56)*
$HDLD_i$				-3.474***				0.674
				(-3.09)				*(0.60)*
N	417	417	417	417	244	244	244	244
F-statistic	5.44**	5.22***	4.84***	5.43***	1.35	1.02	0.86	0.3
P-value	*0.0205*	*0.006*	*0.0027*	*0.0012*	*0.2473*	*0.364*	*0.4647*	*0.8233*
Adj R^2	0.0165	0.0314	0.0425	0.0486	0.0027	0.0003	-0.0034	-0.0167

Moreover, the model's goodness of fit improves in these models since the adjusted r-squared values respond positively to these two control factors. The outcome of regression (4), in which LEV_i is replaced with the interactive term $HDLD_i$, further supports our inference on the inverse relation between pre-merger earnings management and leverage of acquirers, given that the method of payment is not cash.

This brings up a natural question on the potential interaction between the two variables, i.e. the method of payment and the level of leverage, as the effect of *non-cash payment* with *low leverage level* on the abnormal accruals may not simply be additive but multiplicative too. Therefore, an interactive term is added as an additional regressor - this being $CASH_i$*$HDLD_i$, which represents a dummy variable that takes 1 if the acquirer offers equity and is also ranked as LD in the sample with 0 otherwise - to regressions (4), (5) and (7) in Table 4.6.

Interestingly, the interactive dummy variable $CASH_i$*$HDLD_i$, in Table 4.6, has a significant positive coefficient of 3.362 (P-value < 10 percent) in regression (4), 3.743 (P-value <5 percent) in regression (5) and 4.423 (P-value < 1 percent) in regression (7). Adding the interactive variable to the multiple regression model improves the estimated line's goodness of fit as well. This finding suggests that the two dummy variables $CASH_i$ and $HDLD_i$ have a significant multiplicative impact on earnings management, which predicts that a low leveraged acquiring firm would have an extraordinarily higher magnitude of premerger abnormal accruals if equity shares were offered in the M&A payment to its target firm.

The outcome of the cross-sectional regressions conducted is consistent with the results of the univariate analysis in the previous section since the LD subsample taken from non-cash

acquirers displays the highest, and the most significant, rates of abnormal accruals when compared to all other subsamples. This confirms the hypothesis as proposed in this chapter related to the negative relationship between pre-merger earnings management by non-cash acquirers and their level of leverage.

A positive coefficient is reported for $RSIZE_i$ in all regressions for the total sample in Table 4.6 as well as for non-cash acquirers in Table 4.7, ranging from 1.738 to 2.05 at a statistical significance level of 5 percent for most regressions. This result is consistent with the economic benefit conjecture, which suggests that managerial teams have less economic incentives to manipulate earnings in case of relatively small non-cash deals, provided that inflating the reported earnings is not costless (Erickson and Wang 1999; Botsari and Meeks 2008).

Finally, the coefficient of SOX_i is positive and significant for all total sample regressions in Table 4.6 as well as for the regressions of non-cash subsample in Table 4.7 ranging from 1.346 to 2.244. These results indicate that pre-merger abnormal accruals are higher in the post-SOX period compared to the pre-SOX period. This is consistent with the evidence presented in the previous chapter and reinforces the inferences made earlier in section 3.6.

4.6. Summary and Conclusion

The main aim of this research is to contribute to the on-going empirical debate regarding the implications of leverage on management's accounting discretionary power. This study distinguishes itself from prior studies and offers two main contributions to the existing literature. First, it employs a structured sample of non-cash acquiring firms, which already have the motivation to manage their earnings upwards, in examining the impact of debt-

financing on earnings management. This study claims that the adopted design provides more reliable results when comparing the magnitude of earnings management among firms with different levels of leverage, since the motivation to manage earnings is arguably consistent and intentional for all firms in the testing sample, rather than being random or undetermined as in prior studies. Second, unlike previous studies, which usually use a common debt ratio to proxy for leverage, this study constructs a leverage proxy more consistent with earnings management research methodology (Martin 1996).

It is argued in this chapter that pre-merger earnings management conducted by non-cash acquirers should be negatively associated with the firm's level of leverage. This argument is built on two theoretical foundations. First, acquiring firms have the incentive to adopt income-increasing methods before offering their shares to pay for M&A deals (Erickson and Wang 1999; Botsari and Meeks 2008; Gong et al. 2008). Moreover, leverage can be a determinant of the payment method in a M&A (Faccio and Masulis 2005), a control of managerial opportunism (Jensen 1986), an effective external monitoring device (DeAngelo et al. 1994) and a source of conflicting incentives of earnings management (Jones 1991; Beneish 2001; Chung et al. 2002).

Earnings management is measured using an industry-performance matched model similar to Louis (2004) and Kothari et al.'s (2005) method over the last three quarters prior to M&A announcement. Similar to the results that have been consistently documented by previous studies, such as those found in the works of Erickson and Wang (1999), Botsari and Meek (2008) and Gong et al. (2008), this study reports evidences of upward earnings management practices displayed by non-cash acquirers prior to deals' announcement dates. After splitting

the sample into low versus high leverage subsamples based on an industry-adjusted leverage proxy, only the low-leverage subsample of acquirers provides evidence of earnings management.

As expected, the evidence of pre-merger earnings management is more robust for non-cash acquirers. This finding is supported by a multiple regression analysis, which provides evidence that the inverse relation between earnings management and leverage is very significant. The evidence holds after replacing the leverage proxy with the high-low leverage dummy, as well as after controlling for other factors such as the relative size of the deal and new legislations as represented by SOX.

Unlike the non-cash acquirers' results, no evidence is found to support the notion of earnings management by cash acquirers, which is unsurprising as they lack the economic incentive. Therefore, as expected, testing of the relationship between earnings management and leverage in this particular sample did not reveal any significant results, while the cross-sectional model could not predict any relation.

This chapter has documented how debt creation is more likely to restrict a firm's ability to manipulate discretionary accruals as well as addressing whether it is high in relation to the firm's respective industry, at times when those firms have the economic incentive to manipulate their accruals. Given the link between earnings management and managerial opportunism (Christie and Zimmerman 1994; Easterwood 1997; Jelinek 2007), this can be explained by Jensen's (1986) control hypothesis, which predicts that a higher level of leverage

has a mitigating effect over managerial opportunism since management's control over free cash flow is reduced.

Similarly, the findings can be explained in light of agency theory using the close lenders' monitoring hypothesis by DeAngelo et al. (1994), which predicts both that the relationship between lenders and the borrowing firms is governed by the firm's accounting numbers and that lenders seek to protect their interests by closely monitoring their borrowers.

An alternative interpretation of the results of this study can be found by assuming the conflicting incentives of earnings management (Jones 1991), given that both debt contracts and equity issues are considered as potential sources of incentives for income-increasing earnings management (Beneish 2001). Moreover, this school of thought argues that the impact of earnings management is transient since the effect of discretionary accruals on earnings in a given accounting period has a reversal effect on earnings in a future period (Chung et al. 2002).

Finally, the importance of the findings of this study not only stems from their consistency with previous theories that advocate the mitigating effect of leverage on earnings management, such as Jensen's (1986) control hypothesis, but also because these findings emphasise the relevance of examining the "leverage – earnings management" relationship while the economic incentive to manage earnings exists. From the perspective of regulators such as the SEC, such evidence on earnings management and understanding its mitigating factors has implications on direct accounting standards enforcement that improves the credibility of corporate reports.

Chapter 5. Pre-merger Earnings Management and Non-cash Acquisition Premia

Chapter 5

Pre-merger Earnings Management and Non-cash Acquisition Premia[46]

5.1. Introduction

In the previous two chapters, earnings management is investigated within a M&A context by focusing on two major issues – the remarkable change in the US legal environment represented by the enactment of Sarbanes-Oxley 2002 (SOX), which is discussed in Chapter 3, and the influence of leverage on managerial discretionary power, which is discussed in Chapter 4.

In fact, reporting evidence of pre-merger earnings management, here or in the literature, indicates that managerial teams succeed in their attempts to influence the reported *numbers on paper*, with the aim of reducing the firm's cost of capital. Such evidence per se does not necessarily indicate that the *users' perceptions*, especially those of well-informed ones, are also successfully manipulated. This chapter focuses on this issue and addresses the question of how earnings management undertaken by a firm is perceived and processed by relevant parties.

Like any other corporate investment decision, a merger and acquisition proposal must pass through extensive *ex-ante* analyses for the costs and benefits of the deal from the perspective of the acquiring firm as well as the target. In particular, an acquiring firm has to determine the

[46] A major part of Chapter 5 was presented in the *4th International Accounting & Finance Doctoral Symposium,* Salamanca, Spain, in July 18th - 20th, 2011. under the title *"Pre-merger earnings management as an ex ante forecast variable in M&A: evidence from acquisition premia."*

maximum price it can feasibly offer to the shareholders of a potential target without the deal becoming wealth destroying. From the acquirer's perspective, the true value of a candidate target firm not only represents the pre-merger stand-alone value, but should also include the expected additional post-merger value resulting from the combination of the firms (i.e. synergies). Therefore, the valuation approach that is employed by an acquirer to match the value to be received against the value to be given up has a crucial impact on the overall M&A decision.

Although there is no single method recommended to estimate the value of the target firm, the most commonly used methods for the valuation of M&A deals' are either earnings based methods, such as the 'multiples of comparables', or cash flow based methods, such as the discounted cash flow method (DCF) (Sudarsanam 2003). However, the literature has repeatedly documented that earnings data are considered more value-relevant and more informative from the investors perspective in general as compared to cash flow data which focuses on estimating future performance (Dechow 1994). Addressing this issue, Ritter (1984) argues that earnings are crucial for pricing firms.

As a consequence, the high value-relevance of earnings data for predicting future returns is argued to derive the motivation of managers to manipulate their firms' earnings preceding specific events. These events include corporate activities such as seasoned equity offerings (hereafter SEOs), initial public offering (hereafter IPOs) or M&A deals – all offer clear capital market incentives for the managerial team to attempt to affect the valuation of their firms' equity shares.

Event-specific earnings management studies document fairly consistent evidence of income-increasing earnings management for firms raising capital, such as within IPOs (DuCharme et al. 2001) SEOs (Teoh et al. 1998; Cohen and Zarowin 2010) or M&As (Erickson and Wang 1999; Gong et al. 2008). However, arguing that these firms have "capital market incentives" for managing their earnings before issuing equity can be reasonable only by assuming that capital market participants cannot detect and reverse earnings management (Dechow et al. 2010, p.384).

As indicated in the previous chapters, a number of studies have already investigated earnings management in a M&A context and have addressed that this pre-merger earnings management may impact the firms' valuation during the M&A transacting process. The perspective previously adopted has been to focus on the discretionary power that a management practices in order to report abnormally high accruals which boost earnings before the announcement of a M&A deal (see Erickson and Wang 1999; Louis 2004; Botsari and Meeks 2008; Gong et al. 2008). The common argument in the literature is the capital market incentives. Specifically, it is argued that if an acquiring firm has managed its accruals upward before offering its shares in a M&A deal, the intention has been aimed at inflating the share price in order to issue less shares and, therefore, reduce the cost of capital faced.

As implied above, the "capital market incentives" argument seems theoretically correct in light of the acquirer-target information asymmetry and the agency problems between current and new equity-holders (Jensen and Meckling 1976; Jensen 1986). However, the argument does not adequately explicate how or whether the new equity-holders (i.e. the target's shareholders or their agent/management) respond to this agency problem or indeed how to

deal with the over-reporting of accruals by the acquirer, which implicitly assumes *naivety* on the part of the target's management. In this way, the literature has ignored the resources at the target's disposal, as a well-informed user, available to aid decision-making. A naive investor model is introduced by Sloan (1996, p.291), who suggests "*that investors "fixate" on earnings, failing to distinguish fully between the different properties of the accrual and cash flow components of earnings.*" This view predicts that investors respond to the managed earnings, which contains abnormal accruals, as if this level of earnings would persist in the future.

In fact, accruals have a transient effect on earnings among accounting periods and abnormal accruals are likely to reverse in a future period (Dechow et al. 1995; Chung et al. 2002). As a counter argument to the naive target proposition, this study argues in this chapter that pre-merger earnings management may not be an effective tool to mislead a well-informed participant. Assuming that a target firm is sophisticated enough to recognise the inability of acquirer's abnormal accruals to be able to truly persist, then the non-cash acquisition premium, which is the final product of the bargaining process in a M&A deal, should reflect the target's adjustment to the acquirer's share value.

This chapter examines this proposition focussing on the relationship between pre-merger earnings management and the non-cash acquisition premium. The remainder of this chapter is organised in four main sections as follows. Section 5.2 reviews the previous studies on the accruals' implications on valuation as well as some literature on the influences of acquisition premium. Under section 5.3, a theoretical model is constructed in order to support the development of the proposed hypothesis in this study while section 5.4 illustrates the

methodology. Section 5.5 documents the empirical results of the model while some inferences are made and summarised in section 5.6 to conclude the chapter.

5.2. Literature Review

At least two key areas in the literature must be reviewed in order to establish the relevant literary background at present for the research area of this study, as well as to appreciate the contribution of these studies to the development of ideas found in this work. First, the related studies on accruals manipulation and their implications on valuation are reviewed in section 5.2.1. Second, since this study also contributes to the existing field examining the acquisition premium and its determinants, the relevant literature on the influences over acquisition premium are also reviewed in section 5.2.2.

5.2.1. Accruals' Implications on Value

In the wake of the renowned paper of Dechow et al. (1995), in which they report that overstating earnings in one year by manipulating accruals has a reversal effect on earnings in the following year, Sloan (1996) employs a market expectation model in a wide sample of US firms in order to examine investors' awareness regarding the reversal effect of accounting accruals. Sloan addresses the primary research question "*Do stock prices fully reflect information in accruals and cash flows about future earnings*?" in order to investigate the differential reaction of investors to the released information concerning the cash and the accrual components of earnings.

Sloan's (1996) findings indicate that the persistence of earnings is higher in the cash component of earnings than it is in the accrual component. The evidence suggests that the lower persistence of earnings can be blamed solely on the accrual component. Sloan also presents interesting evidence that investors price – or, in fact, overprice - shares of firms with reported abnormal accruals in one period, as if the earnings would persist in future periods. This is considered as evidence of investors' naivety when evaluating the firms' reported earnings and in particular the accrual component.

On the back of Sloan's findings, further research was stimulated. This new line of research was aimed at investigating the extent of the managerial motivation of manipulating stock prices through earnings management practices. For instance, Teoh et al. (1998) and Rangan (1995; 1998) argue that seasoned equity issuers have the motivation to inflate accruals in order to boost their reported earnings before seasoned equity offerings (hereafter SEO). Teoh et al. (1998) investigates the relationship between pre-offering earnings and post-offering performance based on firms' annual data while Rangan (1998) examines the same relationship around the date of the firm's SEO using quarterly data instead. Both studies seem to agree that the managerial motive of adopting income-increasing accounting methods is centred on the aim of making the stock price overvalued before actually making the equity issue itself, in an attempt to obtain more proceeds and reduce the firm's cost of capital.

Both studies mentioned report significant evidence of investors' disappointment in the post-offering period due to the sharp decline in both the reported earnings and stock returns in the period following the earnings management incident, at either a quarterly or an annual period span. Such findings seem to advocate the use of the naive investor model as suggested by

Sloan (1996), since investors' disappointment can be blamed on the fixation on the pre-offering earnings and the failure to adjust for firms' alteration of the accrual component of their earnings.

While Teoh et al. (1998) and Rangan (1998) implicitly assume pre-offering earrings management, Kim and Park (2005) directly examine the association between pre-offering earnings management and the pricing of SEO's. Their work finds explicit evidence of aggressive accounting practices (i.e. abnormally higher accruals than normal) by firms before a SEO. Moreover, pre-offering earnings management is found to be negatively correlated with SEO underpricing as a sign of investors naivety as suggested earlier.

From a sample of initial public offerings (hereafter IPO), DuCharme et al. (2001) examine how pre-offering earnings management impacts the offering pricing and post-offering performance. They confirm the findings of earlier studies in respect to the naivety of investors. Their work provides a robust support to the view that investors do not show any ability to be able to distinguish between managed and unmanaged accruals, which allows managers to affect IPO pricing through managing accounting accruals. Moreover, they document a significant negative relationship between the abnormal accruals of the firm and the post-offering performance, which also persists even with risk-adjusted returns.

On the contrary and despite the documented support for Sloan's model, the naive investor hypothesis has been challenged vigorously. In a paper which aims at re-testing the naive investor hypothesis, Ashiq-Ali et al. (2000) adopt a methodology that focuses on the use of proxies to measure for the level of *investor sophistication* in contrast to the approach of

investor naivety. They argue that given that earnings fixation by naive investors leads to an inverse relationship between the accrual component and future stock performance, then the magnitude of such a relationship should be negatively associated with the proportion of sophisticated investors' interest in the firm, where the investor's sophistication is proxied by the institutional ownership. Surprisingly, the findings of Ashiq-Ali et al.'s (2000) study disagree with the naive investor proposition and its predictions, since the inverse relationship between the accruals and future stock performance is found to be stronger for shares that interest investors of a greater level of sophistication. Likewise, Balsam et al. (2002) use institutional ownership in order to proxy for the investor's sophistication and report evidence of a negative association between the abnormal accruals in the quarterly earnings and the cumulative abnormal returns around the statements' filing date. This indicates that the accrual component of earnings has valuation consequences for sophisticated investors.

In a different study published in the same year, Shivakumar (2000) reports findings that challenge the arguments of Rangan (1998) and Teoh et al. (1998). Interestingly, although he finds evidence of earnings management around the date of a SEO, he also finds evidence that investors assume earnings management as they rationally undo its effects on the SEO, which forfeits the investor naivety proposition. Shivakumar (2000) defends his findings by stating that the evidence of Rangan (1998) and Teoh et al.'s (1998) are biased due to the misspecification of tests, as the results they document lack robustness [47]. Therefore,

[47] Shivakumar explains that the negative relationship between pre-offering abnormal accruals and post-offering abnormal stock returns reported by Rangan (1998) and Teoh et al. (1998) was measured either as market-adjusted returns or as prediction errors from the Fama-French three factor model. Hence, statistical tests based on these measures of abnormal returns are severely mis-specified because of many factors including the skewness in long-horizon returns data as he refers to evidence

Shivakumar (2000) suggests that manipulating accruals by issuers does not achieve its intended outcome on average.

In a parallel stream of growing literature, a number of studies look at the implications of earnings management on the value of the firm around M&A events by examining per-merger abnormal accruals in samples of acquiring firms, and sometimes also their targets (see, for example, Erickson and Wang 1999; Louis 2004; Asano et al. 2007; Baik et al. 2007; Botsari and Meeks 2008; Gong et al. 2008; Lee et al. 2008; Pungaliya and Vijh 2008; Hamza and Lakhal 2010). The core argument in this area of research is that the acquirer's managerial team has the motivation to report abnormally high accruals before deals that entail issuing equity shares by the acquirer to its target firm shareholders (for more detail, see section 3.2.2 of chapter 3). Prior studies directly assume that the market price of the acquirer's share responds positively to the managed and inflated pre-merger earnings, which would lead to the issuance of a lower number of shares to acquire the target firm and would, eventually, reduce the acquirer's cost of capital[48].

The empirical investigation in the literature at present for earnings management around M&A events has repeatedly revealed significant evidence of pre-merger abnormal accruals, which are positively associated with the relative size of the deal implying the economic incentives of

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from two studies: Kothari, S., Warner, J., 1997. Measuring long-horizon security price performance. Journal of Financial Economics 43, 301-339. and Barber, B., Lyon, J., 1997. Detecting long-run abnormal stock returns: the empirical power and specifications of test statistics. Journal of Financial Economics 43, 341-372.

[48] This argumentation is, to some extent, similar to Rangan (1998) and Teoh et al's (1996) proposed scenario about the firm's motive to inflate stock price before equity issues as a mechanism for minimising the cost of capital.

earnings management (Erickson and Wang 1999; Louis 2004; Gong et al. 2008). Focusing on non-cash M&A events, in which shares are used to pay the deals, is very much analogous to the rationale in Rangan (1998) and Teoh et al.'s (1998) research framework of investigating the pre-event earnings management and its *ex-post* potential effects. Louis (2004), for example, provides evidence of post-merger underperformance in his examination of the impact of earnings management on the acquirers' performance. In explaining this anomaly, he concludes that the reversal effect of accruals is an important determinant of the post-merger market reaction and the stock's performance.

Beyond the stock market's financial reaction, Gong et al. (2008) warn that potential post-merger litigation costs are likely to be a consequence for those acquiring firms that have adopted income-increasing accounting procedures prior to the M&A activity. They report a positive relationship between pre-merger earnings management and the probability of post-merger litigation. The seminal study of Erickson and Wang (1999) also sheds light on another negative potential consequence of pre-merger earnings management. They advise the acquirer's management team to consider the M&A target firm as a well-informed user that may also hire advisors to encounter the existing agency problem and reduce information asymmetry. Therefore, the risk of being caught with pre-merger earnings manipulation is a cost that should not be ignored, and acquirers are cautioned to choose to manage earnings unless the cost of undoing earnings management outweighs the cost of undertaking it.

5.2.2. Influences of Acquisition Premium

Although there exists a considerable amount of research examining whether M&A deals create value for the acquirer and target's shareholders, there is a relatively small amount of research on explaining the variation in acquisition premium (i.e. payment made in excess of the targets market value) paid to target shareholders. It appears that the peculiar nature of each M&A deal and the complications of the transacting dynamics explain the shortage of research. However, research has grown since the introduction of machine-generated data in this area of research (Eckbo 2009).

The acquisition premium is investigated from several perspectives in hopeful attempts of finding the key factors that affect its level. In early work, Huang and Walking (1987) suggest that personal taxes can be an influential factor if they vary depending on the method of payment. They provide evidence that target shareholders demand a higher acquisition premium in cash deals since they are immediately taxed and thus, in this situation, they expect to be compensated, unlike in non-cash deals where tax is not deducted immediately but deferred until the new shareholders exchange their shares for cash at their own disposal.

From another viewpoint, Haw et al. (1987) focus on the hypothesised relationship between the financial health of the target firm prior to M&A and the magnitude of the acquisition premium offered. They argue that managers may decide on a M&A in order to avoid a risk of bankruptcy. Accordingly, acquiring a healthy firm may result in agreeing on a level of acquisition premium that is a substantially different from that offered while acquiring a distressed one. Haw et al. (1987) use Altman Z-score to proxy for the target firms' financial

health in their study, after controlling for firm specific variables. Although their findings do not indicate a statistically significant difference between acquisition premia offered to the distressed targets and those offered to the healthy targets, their findings clearly show the variation in the acquisition premium when the distressed firms are sub-grouped into those with tax-loss-carryforward experience and those without. They find evidence that distressed target firms with tax-loss-carryforward experience enjoy higher acquisition premia than those given to healthy firms or distressed ones with no previous experience of tax-loss-carryforward.

In a different study, Crawford and Lechner (1996) examine the effects of other financial attributes of the target firm on acquisition premia. They show mixed and weak results regarding tax carryforward after controlling for liquidity and solvency using suitable proxies. However, they provide significant evidence that the target's likelihood to be acquired is positively related to its liquidity but inversely related to its leverage.

The empirical contribution of the studies discussed above is valuable for understanding some sources of the acquisition premium. However, they seem to focus exclusively on "target-related" variables and fall short of considering other important factors, such as those "acquirer-related" ones. In this manner, these early works could be accused of viewing the acquirer as a passive recipient in the transacting process. This limitation is less pronounced in Bugeja and Walter's (1995) study as they consider the financial performance of the acquirer as well as the target's. In addition, they include the acquirer's toehold (i.e. pre-merger ownership) in the target firm before obtaining a controlling ownership interest (Stulz 1988). The results of their model reveal that acquirers' prior M&A period financial performance is negatively associated with the acquisition premium whereas acquirers' pre-merger toehold in the target

firm is positively related with this premium. Despite the fact that Bugeja and Walter (1995) introduce new influences over the acquisition premium which distinguishes their study from related work, their findings could arguably be biased because they are based on a sample that includes M&A deals regardless of whether or not the deals are successfully completed or not. Therefore, their evidence does not reflect the equilibrium acquisition premium, which M&A parties agree upon.

However, Bugeja and Walter's evidence is challenged in research by Schwert (2000), in which he argues that firm characteristic variables, such as performance or size, are not reliably related to the acquisition premium. Schwert (2000) emphasises the role of negotiation dynamics of M&A deals and their impact on the deal's pricing. He posits that "*[o]ne way to increase the expected premium is to initiate a multiple-bidder auction*"(2000, p.2624). Schwert's (2000) analysis for the acquisition premium compares sub-samples of friendly offers to hostile acquisitions and indicates evidence that the acquisition premium is significantly higher in unnegotiated deals (i.e. hostile acquisitions).

A recent paper by Wickramanayake and Wood (2009) reviews some empirical literature on the influence of an acquirer holding a toehold on the acquisition premium. They conclude that the most convincing argument addressed within the existing literature is that an acquirer's pre-merger toehold is inversely related to the acquisition premium. This relationship can be explained by proposing that the greater the toehold held, the fewer the additional shares that must be sought to obtain the controlling majority. Lower demands and a weaker position for competing bidders are natural consequences and, therefore, a lower acquisition premium is more likely to be offered.

Despite the cumulative contributions by each of Huang and Walking (1987), Haw et al (1987), Bugeja and Walter (1995), Crawford and Lechner (1996) and Schwert (2000), the findings of all of these studies are obtained using the target's cumulative abnormal stock return (CAR) around the deal's announcement date as a proxy for the acquisition premium. Using target' CAR in the empirical literature of the level of the acquisition premium was common before having the exact offer prices available on M&A databases such as *SDC* and *ONE Banker* (Eckbo 2009).

One of the earliest studies that investigated the acquisition premium data as obtained from *SDC* and calculated based on the offer price is "*How Much Is That Company Worth?: Interorganizational Relationships, Uncertainty, and Acquisition Premiums*" by Haunschild (1994). She provides evidence that is consistent with previous studies regarding the impact of competition on acquisition premia. However, Haunschild's (1994) paper reports little support for the influence of the financial conditions of the target on the acquisition premium after controlling for the potential synergy between the acquirer and target. Unexpectedly, she finds no evidence on the relationship between high acquisition premia and synergistic acquisitions.

Hauschild (1994) sheds light on the connection between the uncertainty incorporated with target valuation and the use of investment banking firms. In accordance with that, Porrini (2006) and Chahine and Ismail (2009) emphasise the role of pre-merger financial advisory and investigate its implications on the acquisition premium. Specifically, Porrini (2006) examines the relation between the presence of an investment banking firm in the merger process and the acquisition premium. She documents a positive relation between acquirers with advisory investment bankers and the acquisition premium, even after controlling for the target's use of

advisors. This evidence is explained by the potential conflict of interests between the M&A advisor its client - the acquirer. Porrini's (2006) argument implies that M&A advisory fees are based on the deal's value and that advisors compensation increases with a higher acquisition premium. Nonetheless, Porrini (2006) does not directly examine how the advisors' fees correlate with acquisition premia.

In contrast, Chahine and Ismail's (2009) study focuses on M&A advisory fees and their impact on the acquisition premium. Initially, they argue that the use of M&A advisors per se is not the only factor that can influence the acquisition premium, but rather the reputation of the hired advisors can also exert an effect. Although they provide evidence that an investment banking firm's reputation is positively correlated with the fees they earn, their results do not indicate any evidence on the impact of the investment bank on the acquisition premium. Chahine and Ismail (2009) conclude that if advisory fees paid by an acquirers exceed those paid by targets, then the acquisition premium is more likely to be lower.

5.2.3. Summary and Potential Contributions to the Literature

The relevant literature on the value relevance of accruals reveals that management manipulates the accrual component of earnings in order to inflate the share price prior to particular events that include issuing equity shares in, such as SEO (see, for example, Rangan 1998; Teoh et al. 1998), IPO (see, for example, DuCharme et al. 2001) and M&A (see, for example, Louis 2004; Gong et al. 2008). The common underlying rationale is noticeably aimed at reducing the cost of capital. However, the literature of pre-event earnings management implicitly assumes the naive investor model of Sloan (1996) in order to validate this argument.

Surprisingly, the validity of the naive investor model has been challenged in IPO and SEO contexts but not within a M&A context. The earnings management research surrounding M&A events implicitly adopts the naive investor model to explain the reportedly positive evidence of pre-merger abnormal accruals in order to back the proposition that reducing the cost of capital is the managerial motivation (see, for example, Erickson and Wang 1999; Asano et al. 2007; Botsari and Meeks 2008).

Unlike SEOs and IPOs, M&A events are a good example of a business transaction where relatively sophisticated users (i.e. management) act as agents on behalf of investors (i.e. their shareholders). In such situations, assuming that investors are naive is not persuasive and needs to be readdressed. Moreover, there is a substantial gap in the relevant literature related to investigating the target's (or even the acquirer's) ability of detecting pre-merger earnings management and adjusting its effect in the deal's pricing.

Analysing the literature related to the acquisition premium indicates that its influences can be categorised into three groupings: target-related factors, acquirer-related factors and transacting-related factors. Despite the literary attempts of achieving theoretical conformity regarding the expected effect of each factor, the empirical evidence does not prove consistent. Interestingly, research on the acquisition premium has shifted toward using the offer price instead of the target's CAR near a deal's announcement, particularly since the availability of offer related-data on machine readable format. It is claimed that this move has contributed positively to this area of research since using CAR as a proxy for acquisition premium is problematic and subject to bias from reflecting offer-irrelevant factors.

However, the literature related to the acquisition premium does not explicitly investigate whether pre-merger practices such as earnings management would have any influence on a deal's price and, thus, on the offered acquisition premium, especially when the payment (also the premium) offered by the acquiring firm is not cash. In addition, there is no clear distinction in the literature between the cash and non-cash acquisition premium, although calculating the acquisition premium by databases varies depending on the M&A payment method.

Given the above discussed gaps in the relevant literature, this study contributes to the existing research in several ways. First, it examines the naivety of investors in a M&A context by adopting the counter argument that a target's management is a well-informed user that is more likely to detect pre-merger earnings management and reverse its impact. Second, by developing a theoretical perspective on the potential impact of pre-merger earnings management on non-cash deals' acquisition premia, this chapter can significantly add to the existing literature by providing a better understanding of the consequences of manipulating earnings given that the user is sophisticated and well informed such as target firms. Third, the chapter addresses the question of whether earnings management is relevant to the valuation process and acquisition premia in non-cash M&A deals. Finally, this chapter simultaneously assesses the same set of acquisition premium factors for cash and non-cash samples.

The following sections continue by outlining the rationale behind the testable hypothesis of this study.

5.3. Theoretical Framing and Hypothesis Development

5.3.1. Agency theory and Informational Asymmetry

Since the current chapter pays greater attention to the transacting dynamics of a M&A, this study is directly complemented by Hansen's (1987) model which aids the study's theoretical framework. Therefore, it is posited that a M&A deal is initiated in a market where buyers (i.e. acquirers) seek to buy the assets of sellers (i.e. targets). On each side of the transaction (i.e. the buyer's side and the seller's side) there is one agent (i.e. the management) acting on behalf of passive owners with the motivation of maximising the owners' wealth (Myers and Majluf 1984). However, the efficiency of managers in decision making creates an agency problem between the current and the new shareholders every time new equity issues are decided upon by a given firm (Jensen and Meckling 1976). This means that management's decisions would favour current shareholders' interests over those of the new.

Therefore, information asymmetry is perceived by the participating sides of a M&A deal as each party possesses proprietary information on its own firm's value. It can be noted here that the amount of information known about a firm and its earnings limits the extent of its earnings management and, therefore, the motivation as well as the effectiveness of earnings management cannot be expected when information is perfectly symmetric between the acquiring firm and other stakeholders (Richardson 2000). Although agents bargain under imperfect informational conditions, they are well-informed users, whose resources and access to information is superior than average users'.

5.3.2. The Method of Payment of M&A

The main goal of this study is to investigate whether earnings management affects M&A deal pricing and the resulting acquisition premium. Therefore, for M&A deals paid for with 100 percent cash, the changes in the acquirer's share price around the M&A are irrelevant in either the deal's pricing or indeed in the determination of the acquisition premium. Therefore, as discussed in Chapter 3, an acquirer does not have the motivation to influence its share price prior a cash M&A deal (Erickson and Wang 1999). Two propositions are needed for the sake of developing a relevant theoretical framework here. First, the payment structure of a M&A deal must include the issuance of equity shares to the target, and second, the acquiring firm must then have the incentive to manage their earnings prior to announcing the M&A deal.

In a non-cash deal, the acquiring firm agrees to issue new shares to target's stockholders based on the certain exchange (swap) ratio, as recalled from the discussion in section 3.3.3. The higher the acquirer's share price, the lower the exchange ratio and the fewer shares to issue to target's shareholders. Thus, the managers of the acquiring firm may adopt pre-merger income-increasing earnings management as a technique to minimise the dilutive effect on the current shareholder's EPS and their voting power (Eddey and Taylor 1999).

5.3.3. Adverse Selection Problem and the Signalling Theory

The renowned *lemons' problem* theory of Akerlof (1970) suggests that in the M&A market a potential acquirer assumes that a target firm accepts the cash offer only if it finds - according to its proprietary information - that its real value is lower than the offer received. Due to

information uncertainty, the acquirer is likely to discount the target's value to entrench itself against adverse selection risk.

However, the scenario is bidirectional (i.e. dual direction of information asymmetry) when an acquiring firm offers equity shares to its target since equity has a contingent-pricing effect. The target firm must also deal with information uncertainty regarding the real value of the shares offered by an acquirer (Eckbo et al. 1990). Since the target is exposed to the risk of adverse selection (i.e. receiving overvalued shares), it is likely to discount the acquirer share's value. This situation is described by Hansen (1987) as a *double lemons' problem*.

Assuming the lemons and double lemons' problems in the M&A market, Hansen's (1987) theory for the choice of method of payment in M&A suggests that the acquirer offers cash when its shares are undervalued while it offers equity shares only when they are overvalued. According to this theory, a target firm can use the method of payment in M&A as a *signal* to learn about the fairness of the acquirer's share value.

From the acquirer's perspective, the awareness of the value-discounting strategy adopted by targets receiving offers that include equity shares presents another motivation for the acquirer's management to inflate pre-merger earnings and influence its share price before offering shares that are going to be eventually discounted during the M&A transacting process.

5.3.4. M&A Pricing: An Equilibrium Model

In M&A offers that contain equity shares, the quantity of shares received from the acquirer in exchange for one share given up by the target is referred to as the *share-swap ratio* (Arzac

2004). At the equilibrium price of a M&A deal (i.e. at which parties agree to complete the transaction), discounting the value of the exchanged acquirer's shares affects the share-swap ratio positively in favour of the target shareholders (i.e. more shares need to be issued by the acquirer per one share in the target firm). In proofing this simple premise, let V_i represent the equilibrium deal value per share of the target's share that both the acquirer and the target agree to transact upon in deal i, C_i is the average cash or any other form of assets that is included in the acquirer's offer per target share, which will be zero in pure share-for-share deals, while E_i is the market value of the total equity consideration issued by the acquirer in exchange for one share in the target firm, so that it V_i can be denoted as follows:

$$V_i = C_i + E_i \tag{5.1}$$

If we let R_i represent the share-swap ratio, indicating the number of shares issued by the acquirer per a target share, and P_{ACQi} represent the market value of the acquirer's share at time the target is approached, then E_i can be defined as:

$$E_i = \left(R_i \times P_{ACQi}\right) \tag{5.2}$$

So, following this, the share-swap ratio can be calculated as:

$$R_i = \frac{E_i}{P_{ACQi}} \tag{5.3}$$

If the target perceives P_{ACQi} as an overpriced value for the acquirer's share so that at some point it must be discounted by d_i to adjust it to the fair value, where $0 \leq d_i < 1$, then the share-swap ratio will also be adjusted as follows:

$$\bar{R}_i = \frac{E_i}{P_{ACQi} \times (1 - d_i)} \tag{5.4}$$

Hence, the adjusted share-swap ratio $\bar{R}_i$ increases proportionally with the discount d_i at the rate $\left(\frac{1}{1-d_i}\right)$ to maintain the equilibrium value of the deal V_i as follows;

$$\bar{R}_i = R_i \times \left(\frac{1}{1-d_i}\right) \tag{5.5}$$

5.3.5. Acquisition Premium and Earnings Management: Earnings Management Correction Hypothesis

A deal's share-swap ratio $\bar{R}_i$ is determined after agreeing on the deal's value V_i. As a starting point to calculate V_i, the economic value of the target firm should be estimated[49]. For publicly traded targets, the market share price is usually a reasonable platform for valuation.

Normally, the target's fair value is not adjusted if the acquirer is not obtaining a controlling ownership interest in the target firm. Otherwise, offering a premium above the target share

[49] Valuation models range from asset-based to performance-based models. Given the variety of valuation methods, a common approach in practice is to combine DCF (i.e discounted cash flow method) with valuation multiples, such as using EBITDA multiple with P/E ratio (Arzac 2005).

market value is essential and common in controlling deals as the acquiring firm seeks to convince the shareholders of the target firm to give up their shares (Arzac 2004).

Naturally, the acquirer may seek to control the target firm in order to change its operational direction to serve the acquirer's best economic interests. Therefore, the offered price does not only pay off the target's equity value but it should also pay any compensation for obtaining the right to control the target's assets and liabilities. For this reason, the acquisition premium is often described as a "*control premium*" (see, for example, Gaughan 2005; DePamphilis 2007; Gaughan 2007).

Arzac (2004: p.148) defines the acquisition premium as "*a payment [made by the acquirer] in excess to the value improvements that the market has already impounded into the target pre-acquisition price*". The acquirer's management usually convinces their shareholders when a M&A deal is priced at a premium by claiming that the present value of *ex-post* M&A synergies[50] are equal or greater than the given up acquisition premium. M&A synergies indicate the value-created is due to "*the ability of a corporate combination to be more profitable than the individual profits of the firms that were combined* (Gaughan 2005: p.56)."

Pricing a deal at a premium can be illustrated under the equilibrium model in equation (5.1) by breaking down the value V_i into two components - the target's market value per share, P_{TGTi},

[50] Synergy can be operating, due to cost reductions may result from economies of scale (for example the redundant costs) or enhanced revenues of the combined firm, and/or financial, by which the cost of capital is cheaper for the combined firm. The anticipation of operating and financial synergies provides incentives to the bidder to offer premium (Gaughan 2005).

and an incremental amount of acquisition premium offered by the acquirer and accepted by the target, PR_i, denoted as follows:

$$P_{TGTi} + PR_i = V_i \tag{5.6}$$

If the market price P_{ACQi} was perceived by the target as a fair valuation and was not to be subsequently discounted, then V_i could be expressed as follows:

$$P_{TGTi} + PR_i = C_i + \left(R_i \times P_{ACQi}\right) \tag{5.7}$$

while the acquisition premium would then be equal to:

$$PR_i = C_i + \left(R_i \times P_{ACQi}\right) - P_{TGTi} \tag{5.8}$$

However, if the pre-merger acquirer's earnings were manipulated in order to influence its share price, then the target, as a rational and well-informed user, is likely to detect earnings management and correct its effect by discounting the acquirer's share price. The discounting strategy is expected to be proportionate to the magnitude of earnings management in order to maintain the same level of "*real*" acquisition premium, which can be defined as the premium offered in excess of the re-evaluated deal's price after the well-informed transacting parties agree to discount any overpriced non-cash medium of exchange[51]. In fact, a rational acquirer

[51] As a consequence, information about either the discounting procedure or the *real* acquisition premium is not publicly available.

is more likely to be ready to offer a higher "*nominal*" acquisition premium if the outgoing exchange medium is overpriced[52].

In this case, $\overline{R_\iota}$ is the share-swap ratio R_i after being adjusted (increased) by $\left(\frac{1}{1-d_i}\right)$ as a result of discounting P_{ACQi} by d_i, which is likely to be positively associated with the acquirer's pre-merger earnings management. Therefore, the real acquisition premium $\overline{PR_\iota}$ can be calculated as follows:

$$\overline{PR_\iota} = C_i + \left(\overline{R_\iota} \times P_{ACQi}(1 - d_i)\right) - P_{TGTi} \tag{5.9}$$

Solving the parentheses shows that this can be rewritten as:

$$\overline{PR_\iota} = C_i + \left(\overline{R_\iota} \times P_{ACQi}\right) - P_{TGTi} - \left(d_i \times \overline{R_\iota} \times P_{ACQi}\right) \tag{5.10}$$

which means that the real acquisition premium $\overline{PR_\iota}$ is less than the nominal acquisition premium PR_i for all $d_i>0$, such that:

$$\overline{PR_\iota} = PR_i - \left(d_i \times \overline{R_\iota} \times P_{ACQi}\right) \tag{5.11}$$

In other words, the greater the discount d_i applied on the acquirer's share value P_{ACQi} in the M&A transacting process, the higher the nominal acquisition premium is, as denoted by:

[52] The explicit cash or non-cash acquisition premium, which is publicly available from the relevant data sources such as *Thomson One Banker*, is denoted here as the *nominal* (in contrast to *real*) premium since it is calculated according to the publicly known values of exchange mediums used for paying for the M&A deal, such as equity shares.

$$PR_i = \overline{PR_\iota} + \left(d_i \times \bar{R}_\iota \times P_{ACQi}\right) \tag{5.12}$$

Unlike the naive investor model of Sloan (1996), the *a prior* in this study is that the transacting parties are sophisticated investors who have greater resources and incentives to access relevant information than average users in the market. Therefore, the theoretical model of this study stimulates assessing the testable implication that there is a positive association between the nominal acquisition premium and the magnitude of acquirer's pre-merger earnings management in M&A deals whose payment methods include equity shares.

Therefore, it could be argued that acquirer's pre-merger earnings management, EM_{ACQi}, serves as a proxy for the discount term $\left(d_i \times \bar{R}_\iota \times P_{ACQi}\right)$. Thus:

$$PR_i \equiv \overline{PR_\iota} + EM_{ECQi} \tag{5.13}$$

In short, this chapter attempts to assess the following hypothesis:

> *Hypothesis*1: There is a significant positive association between the acquisition premium and the magnitude of earnings management in non-cash M&A.

5.4. Research Methodology

5.4.1. Linear Regression Model

The main objective of this research is to examine the hypothetical relationship between the level of acquisition premium and acquirers' pre-merger earnings management. In order to test this relationship, a linear regression model is proposed as follows:

$$PR_i = \gamma_0 + \gamma_1 EM_{ACQi} + \gamma_2 ROE_{ACQi} + \gamma_3 ROE_{TGTi} + \gamma_4 IB_{TGTi} + \gamma_5 TOE_{ACQi} + \gamma_6 RSIZE + \gamma_7 DBT_{TGTi} + \gamma_8 CHLNG_i + \gamma_9 VRLTD_i + \sum_{y=1}^{m=9} \gamma_{y+9} D_{y+1999} + \varepsilon_i \quad (5.14)$$

Where:

PR: is the acquisition premium in a M&A deal, which results in a controlling acquirer's interest in the target, and calculated based on the shares' price index four weeks prior to the deal's date of announcement;

EM_{ACQ}: is the acquirer's earnings management as proxied by the abnormal accruals during the last three quarters prior to the deal's announcement date;

ROE_{ACQ}: is the acquirer's return on equity ratio prior to the M&A announcement date. It is calculated based on the acquirer's performance in the 12 months preceding the deal;

ROE_{TGT}: is the target's return on equity ratio prior to M&A announcement date. It is calculated based on the target's performance in the 12 months preceding the deal;

IB_{TGT}: is the advisory fees paid for investment banking services used by the target firm during the M&A transaction;

TOE_{ACQ}: is the acquirer's toehold ownership interest in the target firm prior to the controlling M&A deal, and 0 otherwise;

RSIZE: is the size of the M&A deal relative to the acquirer's size;

DBT_{TGT}: indicates the target's debt ratio before the M&A;

CHLNG: is a dummy variable which takes the value of 1 if the deal was challenged (i.e. by having multiple bidders), 0 otherwise;

VRLTD: is a dummy variable which takes the value of 1 if the deal was a synergistic vertical integration M&A, 0 otherwise;

D_{y+1999}: is a dummy variable for the year in which the M&A was announced, where $y=[1,m]$, $m=9$.

γ: is the coefficients' index,

ε: is the error term, and

i: is the sampled M&A deals' index.

5.4.1.1. The Dependent Variable (PR_i)

Before the availability of the offer prices on databases such as *SDC* and *Thomson ONE Banker*, the target's cumulative abnormal return (CAR) around the announcement date was frequently used as a proxy for the acquisition premium paid in the empirical literature (see, for example, Haw et al. 1987; Bugeja and Walter 1995; Crawford and Lechner 1996). This target CAR proxy has been criticised and is considered problematic as it can potentially reflect not only the original offer price, but also include effects from a probable competing offer or the failure of an alternative deal on the date of the initial offer (Eckbo 2009). For this reason, studies that have instead been able to use the offer-price-based acquisition premium as available from certain databases are believed to produce more reliable results such that the premium is calculated as:

$$PR_i = \frac{Offer\ Price}{Base\ Price} - 1 \quad (5.15)$$

Ideally, the base prices used should be those that are the closest to the deal announcement date but those that are not affected by the potential event-specific informational leakage. Therefore, deciding on the correct time horizon of "*the base price*" of securities to use in order to calculate the acquisition premium is another important concern. On the one hand, selecting a base price that is too close to the official announcement date (i.e. the window is too small) can be inappropriate because it may have already reflected M&A rumours or potential information leakage concerning the deal. On the other hand, selecting a base price that is too early (i.e. too far away from the merger itself) can also be inaccurate because it is more likely to be a biased base price due to potential superfluous factors. For these two reasons, there is no unanimous agreement over the correct window for determining a reasonable base price to be used in calculating the acquisition premium. Normally, the base prices are selected within a reasonably adequate time prior to the announcement date within a period which ranges in the literature from two days before the M&A announcement date up to a maximum of three months (see, for example, Porrini 2006; Chahine and Ismail 2009; Wickramanayake and Wood 2009).

Schwert (1996) provides empirical evidence suggesting that the market on average anticipates a M&A deal 21 days before its official announcement. In accordance with Schwert's (1996) findings and following Porrini (2006), acquisition premium (PR_i) data in this study is obtained from the *Thomson ONE Banker* database which calculates the premium using base prices four weeks prior to the announcement date. Relevant databases, including *Thomson One Banker*, do not distinguish between the acquisition premium of cash deals and those of non-cash deals.

The formula in equation (5.15) is normally used for calculating both types of acquisition premia. Therefore, PR_i in a non-cash deal indicates the nominal acquisition premium as *Thomson One Banker* uses the pre-merger publically available prices of equity shares of the acquirer for calculating the non-cash M&A offer value[53].

5.4.1.2. The Independent Variable (EM_{ACQi})

The acquirer's earnings management is measured using the signed value of the cumulative abnormal accruals calculated from quarterly data within a three-quarter window prior to the M&A announcement date.

Earlier, Chapter 3 documented evidence that acquiring firms manage their earnings up to three quarters prior to the deal's announcement date (see section 3.5.2). In light of this, similar to the work of Kothari et al.'s (2005), our accruals estimation approach considers the performance effect by calculating the expected accruals on Dechow et al's (1995) modified Jones (1991) model in a cross-sectional estimation for the industry-performance matched portfolios in each quarter, following the recommendation of Louis (2004) and Gong et al. (2008).

A further detailed discussion about the methodology of estimating the abnormal accruals is provided earlier in the thesis within Chapter 2 (section 2.4) for the general background,

[53] Unlike in cash deals, the acquisition premiums in non-cash M&As are calculated based on publicly available pre-merger share prices. As explained in section 5.3.5, we use the term "*nominal*" premium to describe this value because non-cash offers may contain mispriced assets (i.e. equity shares) that may be subject to revaluation by the well-informed beneficiary.

while Chapter 3 (sections 3.4.1 and 3.4.2) explain the calculation method within the research specific setting.

5.4.1.3. The Control Variables

This study controls for a number of variables that may exert an impact over the level of the acquisition premium while assessing the relationship between PR_i and EM_{ACQi}. These variables include the pre-merger performance of both the acquirer (ROE_{ACQ}) and the target (ROE_{TGT}) as calculated by dividing their respective EBIT by total equity for the last 12 months prior to the M&A announcement date. Bugeja and Walter (1995) argue that acquirers with a better performance prior to a M&A deal are more likely to offer higher acquisition premia, since this may indicate that the firm's management has a greater ability to successfully combine the two firms into one, creating higher post-merger value for the shareholders involved. ROE_{TGT}, however, is expected to be negatively associated with the acquisition premium because it is argued that the acquirer is less likely to be able to create greater value through acquiring a previously well-managed target firm (Haw et al. 1987; Bugeja and Walter 1995).

The model also includes a variable denoted DBT_{TGT} which represents the target's debt ratio as a proxy for its capital structure. This is included following the recommendation of Crawford and Lechner (1996) who assert that firms with lower leverage are more attractive M&A targets. In addition, to control for the target's use of quality M&A advisory services, we include the M&A advisory fees which were paid by the target firm before the deal (IB_{TGTi})[54]. This variable

[54] The fees of the acquirer's advisor are not included in the model because there is a likely misalignment between the interests of the acquirers' advisors and the interests of the acquirers

is expected to be positively related to the premium paid, PR_i (Haunschild 1994; Porrini 2006; Chahine and Ismail 2009). Moreover, the acquirer's pre-merger toehold ownership in the target firm (TOE_{ACQ}) is also controlled for because it may be inversely related to the acquisition premium, due to the fact that a bidder with a toehold position in the firm needs to acquire fewer shares in order to obtain a controlling interest. This means that the quantity demanded of shares is lower and thus the chance for challenging bidders to enter the competition for corporate control is also lower so that there intuitively should be a lower chance for the acquisition premium to be pushed higher (Stulz 1988; Bugeja and Walter 1995; Wickramanayake and Wood 2009).

If there is more than one potential acquirer competing for a certain target, then the acquisition premium is more likely to be higher (Schwert 2000). Hence, the dummy variable ($CHLNG_i$) is added to the model to capture the effects emanating from a multiple bidder contest. Similarly, the relative size of the M&A deal ($RSIZE_i$) is an alternative important factor since prevailing empirical evidence finds that relatively large deals produce lower post-merger returns for the acquiring firms (Antoniou et al. 2008). $RSIZE_i$ is a known control variable that has been used in the M&A literature and is usually calculated as the total assets of the target divided by the total assets of the acquirer (Moeller et al. 2004; Wickramanayake and Wood 2009; Madura and Ngo 2010).

An additional explanatory factor can be the degree of relatedness between the acquirer and target – that is, whether or not they belong to the same industry. The model controls for the

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themselves (see, for example, Porrini 2006). The acquirers' advisors fees are normally structured based on factors other than the acquisition premium.

acquirer-target industry sector interaction by including a dummy variable ($VRLTD_i$) that indicates the vertical relatedness of the merging firms. The vertical integration of production for two companies is likely to realise economies of scale for the merged firm and create greater value from the cost reduction (i.e. operating synergy) (Haunschild 1994). To calculate this variable, the approach of Haunschild (1994) has been followed to determine the deals with synergistic vertical integration. By comparing the 2-digit SIC of the acquirer with its respective target, the M&A deal is defined as being a vertical integration if 5 percent or more of the output of the target's industry is used as input by the acquirer's industry, or indeed if 5 percent or more of the output of the acquirer's industry is used as input by the target's industry.

Finally, the sampled M&A deals are obtained from a ten-year time period wherein the M&A market has witnessed considerable changes in the behaviour and valuation of deals, especially since the occurrence of big US corporate scandals and the enactment of Sarbanes-Oxley Act of 2002 (Madura and Ngo 2010). Thus, this study includes a set of year dummies in the model to capture the macroeconomic differences over years for other factors that are not specified by the model[55].

[55] Since the Sarbanes-Oxley Act has had a significant impact on the corporate environment in general in the US, a dummy variable, SOX_i, is included in the model as an alternative procedure to year dummies to indicate the post-SOX era to control for the differences in the corporate investment attitudes and the regulation setting between the two periods. When applying this procedure, the results do not significantly change.

5.4.2. Sampling and data

5.4.2.1. Sample Selection

A sample of US acquiring firms is taken from *Thomson One Banker* according to the following criteria:

1. The M&A deals are announced between 01/01/1999 and 12/31/2008.[56]
2. All merger and acquisition deals included are completed transactions.
3. The acquiring firms and their respective targets are publicly listed companies in order to mitigate variation in information asymmetry and motives in managing earnings (Baik et al. 2007).
4. All deals which include either acquiring and/or target firms from the financial sector, which have SIC codes between 6000 and 6999, are excluded from the sample. This is a common practice in the literature as this sector is subject to special regulations (see, for example, Erickson and Wang 1999; Gong et al. 2008).
5. The deal value is at least $1 million to exclude all deals of negligible size. The purpose of this procedure is to discard deals where firms have a lower motivation to manage earnings due to the insignificant economic motivation to do so (Erickson and Wang 1999).
6. The deal should result in allowing the acquiring firm to obtain a controlling ownership interest in the deal (i.e. the acquirer owned less than 50 percent before the transaction

[56] The sampling period cut-off point (31/12/2008) is determined once data collection for this study started in the beginning of 2009. A period of ten years is chosen in an ad hoc sampling period.

and greater than 50 percent by completing the deal) so that the acquirer is more likely to offer an acquisition premium to the target (Arzac 2004).

7. The deals have acquisition premium data available on *Thomson One Banker* and earnings management data on *Compustat*.

Applying these criteria results in a total of 424 M&A deals where 262 of them represent a sample of non-cash deals which are later used for assessing the research hypothesis while the remaining 162 are cash deals used in a robustness check. Further details regarding the sample distribution are presented shortly in section 5.5.1.

5.4.2.2. Data Sources

The source of the data used within this chapter for all variables, except for $VRLTD_i$, is either *Thomson ONE Banker* or *Compustat* (for further details please refer to section 3.4.4.2). In order to calculate the vertical relatedness of the deals ($VRLTD_i$), we used the *Input-Output Accounts* from the industry data from *Survey of Current Business* on the website of *US Department of Commerce* in order to find *The Use of Commodities by Industries* tables.[57]

Since industry classification used in the tables follow the *North American Classification System* (NAICS), the codes are converted into the *Standard Industrial Classification* (SIC) system using the correspondence tables between NAICS and SIC as provided by the *US*

[57] The *Input-Output Accounts* were obtained from http://www.bea.gov/industry/iotables/ on January 20, 2011.

Census Bureau.[58] Finally, the pre-merger acquirer's share performance (CAR_{ACQi}), which is used in the sensitivity analysis, is calculated using *Eventus* and *CRSP*.[59]

5.5. Results

5.5.1. Descriptive Statistics

The descriptive statistics and the sample distribution by year are organised in three panels in Table 5.1 for the overall sample, for non-cash deals and cash deals respectively. Panel A of Table 5.1 reveals that 34 percent (146 deals) of the total 424 deals were announced between 2000 and 2001. Interestingly, when the big corporate scandals engulfed the financial world and when Sarbanes-Oxley Act was enacted in 2002, the statistics show that deals within this year exhibited the highest mean acquisition premium of 113.04 percent with the highest standard deviation of 355.93 percent (for 39 deals) indicating a dramatic change in the corporate attitude toward M&As and their valuation (Madura and Ngo 2010). In contrast, the 37 deals undertaken during 2007 reveal the lowest mean acquisition premium of 24.797 percent as well as the lowest standard deviation of 24.79 percent. Overall, the full sample has a mean acquisition premium of 50.59 percent, which is consistent with previously reported average acquisition premium levels in the literature.

[58] The NAICS-SIC conversion tables were found at the US Census Bureau website at http://www.census.gov/epcd/www/naicstab.htm on February 4, 2011.

[59] *Eventus* and *CRSP* are available at http://wrds-web.wharton.upenn.edu/wrds/ Wharton Research Data Services (*WRDS*).

Panels B and C of Table 5.1 describe the acquisition premium by years for non-cash deals and cash deals, respectively. It can be seen that the mean (median) value of the acquisition premium in cash deals is 73.819 percent (41.085 percent), higher than that seen in non-cash deals, that being 36.227 percent (27.815 percent). The acquisition premium found in cash deals is normally higher to compensate the target shareholders for the personal tax that is immediately deducted from their capital gains from selling their shares for cash, unlike non-cash deals where the tax component is deferred (Huang and Walkling 1987).

Table 5.1 The distribution and the descriptive statistics of acquisition premium by year

The following table presents the distribution of the acquisition premium, which is calculated using shares prices four weeks prior to the M&A deal's announcement date. The distribution by year is provided for the total 424 deals in Panel A, for the 262 non-cash deals in Panel B and for the 162 cash deals in Panel C. The samples were initially taken from *Thomson One Banker* for the period 1999-2008 then we require that acquiring and target firms of the respective deals have accounting data on *Compustat* from 1997 and 2008 inclusive. Descriptive statistics including mean, standard deviation (*STDV*), median, minimum, maximum and the count of deals (*N*) are provided on the acquisition premium of the deals per year in each panel.

Panel A: Total Deals

Year	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
Mean	86.643	45.661	42.559	113.042	56.828	38.652	39.107	50.804	27.653	40.909	50.590
STDV	63.748	52.738	47.634	355.929	70.243	53.639	37.608	68.090	24.797	46.300	119.514
Median	58.530	33.330	43.990	28.030	45.140	28.895	28.400	33.500	27.500	32.230	32.160
Minimum	32.640	-31.580	-74.630	-91.910	-55.880	-19.580	-16.290	-6.420	-42.940	-16.600	-91.910
Maximum	233.220	331.200	152.220	1937.040	267.350	301.880	161.190	402.630	108.460	231.330	1937.040
N	11	79	67	39	39	44	47	36	37	25	424

Panel B: Non-cash Deals

Year	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
Mean	89.806	44.878	35.032	17.649	51.163	29.067	31.344	33.653	19.581	33.789	36.227
STDV	64.450	54.144	47.648	51.938	66.143	40.892	32.894	34.784	21.780	28.977	48.209
Median	58.530	33.200	40.890	18.200	32.700	22.430	25.415	26.885	24.475	28.380	27.815
Minimum	56.030	-30.790	-74.630	-91.910	-55.880	-19.580	-16.290	-6.420	-42.940	-16.600	-91.910
Maximum	233.220	331.200	148.720	131.950	202.120	199.000	127.690	141.940	68.370	89.070	331.200
N	7	57	45	23	24	27	30	16	20	13	262

Cont'd Table 5.1

Panel C: Cash Deals

Year	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
Mean	81.108	47.687	57.955	250.171	65.892	53.875	52.805	64.526	37.149	48.623	73.819
STDV	71.931	50.070	44.771	531.948	77.861	67.924	42.343	84.495	25.357	60.302	181.332
Median	52.025	35.725	53.985	45.705	45.830	32.010	37.260	40.800	29.610	33.390	41.085
Minimum	32.640	-31.580	-38.460	4.120	0.810	7.530	2.700	12.950	-0.740	-10.570	-38.460
Maximum	187.740	210.190	152.220	1937.040	267.350	301.880	161.190	402.630	108.460	231.330	1937.040
N	4	22	22	16	15	17	17	20	17	12	162

The descriptive statistics of the variables used in the regression model are reported in Table 2 for the overall sample, as well as the relevant results once the sample has been stratified by the method of payment used. In this table, the pre-merger abnormal accruals of acquirers (EM_{ACQi}) in non-cash deals show a mean (median) value of 1.09% (0.67%), which is much higher than the mean (median) abnormal accruals value of cash acquirers, which rests at 0.43% (-0.72%). This observed difference is consistent with the literature as well as the findings of chapter 3 as cash acquirers lack the economic incentive to adopt income-increasing reporting methods unless they use equity shares to finance the M&A deal (Erickson and Wang 1999).

On average, acquirers that are able to offer cash in order to pay off their M&A deals seem to be more profitable with a mean (median) pre-merger ROE of 5.95% (7.01%) compared to those which used non-cash payment methods with a mean (median) ROE of -12.77% (2.69%). Table 5.2 also reveals that cash acquirers have a greater pre-merger toehold in their target firms with a mean (median) value of 6.82% (25.28%) with contrast to acquirers in non-cash deals with a mean (median) value of 1.60% (12.56%). This is intuitive as obtaining a controlling interest in a target firm using cash is more feasible if the acquirer has a greater toehold in it (Bugeja and Walter 1995).

More descriptive statistics are shown in Table 5.2 and the next section provides the results of the regression analysis.

Table 5.2 The descriptive statistics of the regression variables

This table presents the descriptive statistics of the main variables used in the regression for the total deals, the non-cash deals and the cash deals, where PR_i indicates the acquisition premium in a controlling M&A deal based on shares price index four weeks prior to announcement date, EM_{ACQi} indicates the acquirer's earnings management proxied by the abnormal accruals during the last three quarters prior to deal's announcement date, ROE_{ACQi} indicates the acquirer's return on equity ratio prior to the deal's announcement date and calculated based on the acquirer's performance in the preceding 12 months, ROE_{TGTi} indicates the target's return on equity ratio prior to the deal's announcement date and calculated based on the target's performance in the preceding 12 months, IB_{TGTi} indicates the advisory fees of investment banking services used by the target firm for completing the deal, TOE_{ACQi} indicates the acquirer's toehold ownership interest in the target firm prior to the controlling M&A deal, and 0 otherwise, $RSIZE_i$ indicates the size of the deal deal relative to the acquirer's size, DBT_{TGTi} indicates the target's debt ratio before the deal, $CHLNG_i$ is a dummy variable which takes 1 if the deal was challenged (i.e. by having multiple bidders), and 0 otherwise and $VRLTD_i$: is a dummy variable which takes 1 if the deal was a synergistic vertical integration M&A, and 0 otherwise.

	Total *N=424*			Non-cash deals *N=262*			Cash deals *N=162*		
	Mean	*STDV*	*Median*	*Mean*	*STDV*	*Median*	*Mean*	*STDV*	*Median*
PR_i	50.5900	119.5138	32.160	36.22687	48.20867	27.815	73.81926	181.3321	41.085
EM_{ACQi}	0.85892	8.221839	0.1133	1.088619	9.007225	0.6739	0.425043	6.489607	-0.717
ROE_{ACQi}	-0.06085	0.860654	0.0457	-0.12777	1.063846	0.02685	0.059529	0.131085	0.0701
ROE_{TGTi}	0.138386	6.059784	0.0000	0.293234	7.542949	-0.0200	-0.14089	0.57842	0.0100
IB_{TGTi}	212.2749	728.2786	0.0000	146.2683	701.3294	0.0000	326.5605	761.3034	0.0000
TOE_{ACQi}	0.034765	0.183371	0.0000	0.015974	0.125577	0.0000	0.068182	0.252777	0.0000
$RSIZE_i$	58.55877	252.9482	5.5050	39.15371	226.0667	3.3000	94.15454	293.4188	13.680
DBT_{TGTi}	0.549553	0.731884	0.4275	0.607112	0.876586	0.4615	0.445399	0.315638	0.3720
$CHLNG_i$	0.042945	0.20294	0.0000	0.038339	0.19232	0.0000	0.051136	0.220904	0.0000
$VRLTD_i$	0.793456	0.40524	1.0000	0.795527	0.403962	1.0000	0.789773	0.408633	1.0000

5.5.2. Regression Analysis

5.5.2.1. OLS Regression Results: Non-cash Deals

The hypothetical relationship between the acquisition premium (PR_i) and an acquirer's pre-merger earnings management (EM_{ACQi}) in non-cash deals is initially assessed in an ordinary least squares (OLS) regression model. In Table 5.3, the results of the OLS regression are presented for non-cash deals. The *F-statistic* of the model reveals significance (*P-value* < 1 percent) for all different combinations of control variables. In addition, the explanatory power of the model is at its best (*Adj R-Sq* = 0.1075) in model (7), in which the acquirer's performance (ROE_{ACQi}), the acquirer's pre-merger toehold (TOE_{ACQi}), the target's performance (ROE_{TGTi}), the target's debt ratio (DBT_{TGTi}), the target's financial advisory fee (IB_{TGTi}) and the relative size of the deal ($RSIZE_i$) is controlled for.

Interestingly, the coefficient of acquirer's pre-merger earnings management (EM_{ACQi}), i.e. the measurement variable, has a positive and significant sign (*P-value* < 1 percent) for all models ran for non-cash deals, as presented in Table 5.3. The coefficient ranges from 1.21 with the lowest *t-value* of 3.06 in model (7) to 1.39 with the highest *t-value* of 3.67 in model (2), which controls only for the acquirer's performance (ROE_{ACQi}). The overall results of regressions (1) to (9) reported in Table 5.3 indicate a significant positive relation between premerger earnings management by acquirers and the acquisition premium calculated based on share prices in non-cash M&A deals.

Table 5.3 The results of the ordinary least squares' regression for the non-cash deals

The following table presents the results of the OLS regression model $PR_i = \gamma_0 + \gamma_1 EM_{ACQi} + \gamma_2 ROE_{ACQi} + \gamma_3 ROE_{TGTi} + \gamma_4 IB_{TGTi} + \gamma_5 TOE_{ACQi} + \gamma_6 RSIZE + \gamma_7 DBT_{TGTi} + \gamma_8 CHLNG_i + \gamma_9 VRLTD_i + \sum_{y=1}^{m=9} \gamma_{y+9} D_{y+1999} + \varepsilon_i$ where PR_i indicates the acquisition premium in a controlling M&A deal based on shares price index four weeks prior to announcement date, EM_{ACQi} indicates the acquirer's earnings management proxied by the abnormal accruals during the last three quarters prior to deal's announcement date, ROE_{ACQi} indicates the acquirer's return on equity ratio prior to the deal's announcement date and calculated based on the acquirer's performance in the preceding 12 months, ROE_{TGTi} indicates the target's return on equity ratio prior to the deal's announcement date and calculated based on the target's performance in the preceding 12 months, IB_{TGTi} indicates the advisory fees of investment banking services used by the target firm for completing the deal, TOE_{ACQi} indicates the acquirer's toehold ownership interest in the target firm prior to the controlling M&A deal, and 0 otherwise, $RSIZE_i$ indicates the size of the deal relative to the acquirer's size, DBT_{TGTi} indicates the target's debt ratio before the deal, $CHLNG_i$ is a dummy variable which takes 1 if the deal was challenged (i.e. by having multiple bidders), and 0 otherwise and $VRLTD_i$ is a dummy variable which takes 1 if the deal was a synergistic vertical integration M&A, and 0 otherwise. Numbers in parentheses represent *t-values* in two-tailed tests. The symbols (*****), (******) and (*******) denote confidence interval of 10, 5 and 1 percent, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Constant	73.463***	74.485***	74.623***	73.641***	73.545***	73.572***	81.009***	81.078***	86.695***	77.946***
	(3.16)	*(3.23)*	*(3.23)*	*(3.18)*	*(3.19)*	*(3.18)*	*(3.47)*	*(3.47)*	*(3.50)*	*(3.10)*
EM_{ACQi}	1.3298***	1.3949***	1.3958***	1.2554***	1.2387***	1.2690***	1.2095***	1.2232***	1.240***	
	(3.47)	*(3.65)*	*(3.65)*	*(3.2)*	*(3.17)*	*(3.2)*	*(3.06)*	*(3.08)*	*(3.11)*	
ROE_{ACQi}		5.6283**	5.7121**	5.5395**	5.7270**	5.6851**	5.6720**	5.7337**	5.6351**	5.401**
		(2.21)	*(2.25)*	*(2.16)*	*(2.25)*	*(2.22)*	*(2.23)*	*(2.25)*	*(2.2)*	*(2.07)*
ROE_{TGTi}			-0.541	-0.731*	-0.730*	-0.753*	-0.741*	-0.738*	-0.728*	-0.6902
			(-1.39)	*(-1.76)*	*(-1.76)*	*(-1.80)*	*(-1.78)*	*(-1.78)*	*(-1.75)*	*(-1.62)*
IB_{TGTi}				0.0053	0.0054	0.0054	0.0060	0.0060	0.0060	0.0060
				(1.25)	*(1.27)*	*(1.27)*	*(1.42)*	*(1.41)*	*(1.4)*	*(1.38)*
TOE_{ACQi}					-2.219*	-2.197*	-2.361*	-2.372*	-2.325*	-2.4731*
					(-1.76)	*(-1.73)*	*(-1.87)*	*(-1.87)*	*(-1.83)*	*(-1.91)*
$RSIZE_i$						0.0301	0.0319	0.0301	0.0273	-0.0012
						(0.48)	*(0.52)*	*(0.49)*	*(0.44)*	*(-0.02)*
DBT_{TGTi}							-13.97*	-13.89*	-13.76*	-15.834**
							(-1.81)	*(-1.79)*	*(-1.77)*	*(-2.00)*
$CHLNG_i$								-8.091	-8.132	-5.0692
								(-0.53)	*(-0.53)*	*(-0.33)*

Cont'd Table 5.3

$VRLTD_i$									-5.568	-4.0468
									(-0.7)	*(-0.5)*
D_{2000i}	-29.81	-28.67	-28.88	-27.92	-27.82	-28.37	-29.21	-28.84	-29.72	-20.67
	(-1.24)	*(-1.20)*	*(-1.21)*	*(-1.16)*	*(-1.16)*	*(-1.18)*	*(-1.22)*	*(-1.21)*	*(-1.24)*	*(-0.85)*
D_{2001i}	-35.63	-32.99	-33.38	-36.51	-35.04	-35.63	-37.21	-36.48	-37.56	-31.22
	(-1.46)	*(-1.36)*	*(-1.38)*	*(-1.49)*	*(-1.44)*	*(-1.46)*	*(-1.53)*	*(-1.50)*	*(-1.53)*	*(-1.25)*
D_{2002i}	-58.40**	-58.84**	-61.30**	-61.11**	-60.95**	-61.22**	-64.26**	-64.36**	-65.65**	-54.50**
	(-2.29)	*(-2.33)*	*(-2.42)*	*(-2.39)*	*(-2.39)*	*(-2.40)*	*(-2.53)*	*(-2.53)*	*(-2.57)*	*(-2.11)*
D_{2003i}	-23.24	-22.84	-23.16	-21.79	-17.08	-17.99	-15.20	-15.28	-16.33	-0.930
	(-0.91)	*(-0.90)*	*(-0.92)*	*(-0.85)*	*(-0.66)*	*(-0.70)*	*(-0.59)*	*(-0.59)*	*(-0.63)*	*(-0.04)*
D_{2004i}	-44.71*	-45.44*	-46.25*	-46.06*	-45.97*	-46.26*	-47.19*	-47.26*	-48.79*	-40.52
	(-1.78)	*(-1.83)*	*(-1.85)*	*(-1.84)*	*(-1.84)*	*(-1.85)*	*(-1.90)*	*(-1.90)*	*(-1.95)*	*(-1.59)*
D_{2005i}	-46.25**	-47.67	-47.83	-46.88	-46.77*	-47.52	-48.24*	-47.43*	-48.94*	-37.76
	(-1.85)	*(-1.92)*	*(-1.93)*	*(-1.88)*	*(-1.89)*	*(-1.91)*	*(-1.95)*	*(-1.91)*	*(-1.96)*	*(-1.50)*
D_{2006i}	-42.87	-43.98	-44.15	-42.11	-41.97	-42.53	-43.08	-42.61	-44.32*	-32.02
	(-1.63)	*(-1.69)*	*(-1.69)*	*(-1.60)*	*(-1.60)*	*(-1.62)*	*(-1.65)*	*(-1.62)*	*(-1.68)*	*(-1.20)*
D_{2007i}	-52.93**	-54.17	-50.70	-50.24*	-50.19*	-50.43**	-51.59**	-51.66**	-52.69**	-45.81*
	(-2.07)	*(-2.13)*	*(-1.98)*	*(-1.96)*	*(-1.97)*	*(-1.97)*	*(-2.03)*	*(-2.03)*	*(-2.06)*	*(-1.76)*
D_{2008i}	-46.81*	-47.72	-47.94	-49.86*	-47.81*	-48.11*	-48.22*	-48.31*	-48.93*	-37.82
	(-1.74)	*(-1.79)*	*(-1.80)*	*(-1.85)*	*(-1.78)*	*(-1.79)*	*(-1.80)*	*(-1.80)*	*(-1.82)*	*(-1.39)*
N	262	262	262	262	262	262	262	262	262	262
F-statistic	2.61***	3.00***	2.96***	2.76***	2.81***	2.63***	2.69***	2.54***	2.42***	1.92**
P-value	*0.0051*	*0.0009*	*0.0008*	*0.0012*	*0.0007*	*0.0012*	*0.0007*	*0.001*	*0.0015*	*0.0182*
R^2	0.1024	0.1285	0.1386	0.1448	0.1571	0.1581	0.171	0.1721	0.1741	0.1354
Adj R^2	0.0632	0.0858	0.0918	0.0924	0.1012	0.0979	0.1075	0.1045	0.1023	0.0647

Further analysis in regression (10), in Table 5.3, models the same relationships as before without the acquirer's pre-merger earnings management (EM_{ACQi}) included, unlike regressions (1) to (9). Interestingly, it can be noticed that the explanatory power as well as the significance of the OLS model deteriorates after excluding the variable EM_{ACQi} when running the regression for the non-cash acquisition premium. In particular, the model loses almost 37% of its explanatory power as the *Adjusted R-Squared* drops from 0.10 in regression (9) to 0.06 in regression (10) and loses around 21% of its significance as the *F-Statistic* declines from 2.42 (*P-value* < 1 percent) in regression (9) to 1.92 (*P-value* < 5 percent).

By comparing the OLS regression results reported for the model with different sets of control variables in Table 5.3, it can be noted that the control variables ROE_{ACQi}, ROE_{TGTi}, TOE_{ACQi} and DBT_{TGTi} reveal coefficient estimates with statistical significance. The coefficient estimate of ROE_{ACQi} (γ_2) indicates a positive association between the pre-merger acquirer's profitability and the size of the acquisition premium offered in a M&A deal. The coefficient γ_2 ranges from 5.40 in model (10) up to 5.73 in model (8) with significance at the 5% confidence interval for all regressions. As explained in the theoretical framework, offering a higher premium in a share-swap deal implies that the bidder will issue more shares than is necessary to the shareholders of the target, which eventually dilutes the EPS for the original shareholders of the acquirer. Therefore, this positive relationship between PR_i and ROE_{ACQi} indicates that the acquirer's management team must hold a greater level of confidence over the future prospects of the firm. Thus it is more convincing to bidding firm shareholders to pay a relatively higher acquisition premium (i.e. issuing more shares) if the acquiring firm has shown better pre-merger performance (Roll 1986; Hayward and Hambrick 1997).

However, the coefficient (γ_3) of ROE_{TGTi}, which indicates the pre-merger target's performance, has a negative sign in all models, as shown in Table 5.3. It has an estimate that ranges between -0.541 (*t-value* = -1.39) in model (3) and -0.753 (*t-value* = -1.80) in model (6). The coefficient γ_3 is significant with confidence interval of 5 percent in regressions (4) to (9). These results indicate evidence of an inverse relation between ROE_{TGTi} and the premium paid in a M&A deal, which is consistent with the empirical findings of some previous studies arguing that there is higher potential of creating value by acquiring the poorly managed targets (see, for example Lang et al. 1989; Servaes 1991; Bugeja and Walter 1995). Therefore, the acquirer's management can justify offering higher premia by the anticipated potential of post-merger value creation.

The control variable TOE_{ACQi} is included in regressions (5) to (10), as shown in Table 5.3. The OLS output provides negative coefficient estimates for this variable (γ_5) between -2.20 in regression (6) and -2.47 in regression (10) at a 10% significance level across all models. Consistent with the literature, the acquirer's pre-merger ownership interest in the target firm before a controlling position has been achieved, has a reducing effect on the acquisition premium offered (Stulz 1988; Bugeja and Walter 1995; Wickramanayake and Wood 2009). Naturally, the acquirer's toehold in the target should be inversely related to the incremental percentage for obtaining a controlling interest, which means there will be a lower quantity demanded for the target's shares, thus there should be a lower equilibrium price and consequently a lower premium offered.

The model also controls for the capital structure of the target firm (DBT_{TGT}) in regressions (7) to (10), as presented in Table 5.3. The results indicate that there is a negative relationship

between the target's debt ratio and the acquisition premium as the variable DBT_{TGT} has a negative coefficient ranging between -13.76 (*t-value* = -1.77) in regression (9) to -15.83 (*t-value* = -2.00) in regression (10). The negative sign of the coefficient γ_7 is predicted by Crawford and Lechner (1996) whose work argued that the target firm's attractiveness decreases with the level of its leverage. However, the results produced by the OLS regression for the non-cash M&A deals in Table 5.3 do not indicate significance for the coefficients of the variables IB_{TGTi}, $RSIZE_i$, $CHLNG_i$ or $VRLTD_i$.

5.5.2.2. Concurrent Analysis for Cash Deals

As argued under the hypothesis development section (i.e. section 5.3.5), pre-merger earnings management would have an impact on the acquisition premium only if the acquirer decided to offer its equity within the M&A payment structure. This hypothesis is directly tested in the previous section using a non-cash sample. Alternatively, it could be argued that the hypothesis itself must imply that the acquirer's pre-merger earning management should be shown to be irrelevant to the acquisition premium in the case of a 100% cash deal. Therefore, this section presents the results of a simultaneous analysis conducted using a sample of cash deals in order to verify the aforementioned argument and add support to the findings of the previous section.

In Table 5.4, the OLS regression results of the model are reported for a concurrent sample of cash deals for the same period. Interestingly, γ_1, the coefficient of EM_{ACQi}, is insignificantly different from zero since it has negative and insignificant values in all regressions, unlike the results reported for the non-cash deals. The regressions produce coefficient estimates $-0.7382 \leq \gamma_1 \leq 0.1661$ with their $|t\text{-values}| \leq 0.27$.

Table 5.4 The results of the ordinary least squares' regression for the cash deals

The following table presents the results of the OLS regression model $PR_i = \gamma_0 + \gamma_1 EM_{ACQi} + \gamma_2 ROE_{ACQi} + \gamma_3 ROE_{TGTi} + \gamma_4 IB_{TGTi} + \gamma_5 TOE_{ACQi} + \gamma_6 RSIZE + \gamma_7 DBT_{TGTi} + \gamma_8 CHLNG_i + \gamma_9 VRLTD_i + \sum_{y=1}^{m=9} \gamma_{y+9} D_{y+1999} + \varepsilon_i$ where PR_i indicates the acquisition premium in a controlling M&A deal based on shares price index four weeks prior to announcement date, EM_{ACQi} indicates the acquirer's earnings management proxied by the abnormal accruals during the last three quarters prior to deal's announcement date, ROE_{ACQi} indicates the acquirer's return on equity ratio prior to the deal's announcement date and calculated based on the acquirer's performance in the preceding 12 months, ROE_{TGTi} indicates the target's return on equity ratio prior to the deal's announcement date and calculated based on the target's performance in the preceding 12 months, IB_{TGTi} indicates the advisory fees of investment banking services used by the target firm for completing the deal, TOE_{ACQi} indicates the acquirer's toehold ownership interest in the target firm prior to the controlling M&A deal, and 0 otherwise, $RSIZE_i$ indicates the size of the deal relative to the acquirer's size, DBT_{TGTi} indicates the target's debt ratio before the deal, $CHLNG_i$ is a dummy variable which takes 1 if the deal was challenged (i.e. by having multiple bidders), and 0 otherwise and $VRLTD_i$ is a dummy variable which takes 1 if the deal was a synergistic vertical integration M&A, and 0 otherwise. Numbers in parentheses represent *t-values* in two-tailed tests. The symbols (*****), (******) and (*******) denote confidence interval of 10, 5 and 1 percent, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Constant	79.869	78.912	85.840	93.510	93.456	94.586	36.474	43.953	61.785	61.722
	(0.84)	*(0.70)*	*(0.78)*	*(0.85)*	*(0.84)*	*(0.85)*	*(0.32)*	*(0.40)*	*(0.52)*	*(0.52)*
EM_{ACQi}	-0.5765	-0.7382	0.0269	-0.5346	-0.5248	-0.4424	-0.1168	0.1661	-0.0327	
	(-0.22)	*(-0.27)*	*(0.01)*	*(-0.19)*	*(-0.18)*	*(-0.15)*	*(-0.04)*	*(0.06)*	*(-0.01)*	
ROE_{ACQi}		198.9832	161.9677	151.2256	150.0161	145.5255	122.8587	105.4682	112.4646	112.4084
		(1.43)	*(1.17)*	*(1.08)*	*(1.05)*	*(1.02)*	*(0.87)*	*(0.77)*	*(0.82)*	*(0.82)*
ROE_{TGTi}			-88.997**	-86.38**	-86.298**	-95.49**	-79.494**	-86.323**	-86.977**	-87.04**
			(-2.55)	*(-2.46)*	*(-2.44)*	*(-2.57)*	*(-2.13)*	*(-2.39)*	*(-2.4)*	*(-2.44)*
IB_{TGTi}				-0.0233	-0.0229	-0.0232	-0.0298	-0.0246	-0.0224	-0.0224
				(-1.02)	*(-0.97)*	*(-0.98)*	*(-1.27)*	*(-1.08)*	*(-0.95)*	*(-0.96)*
TOE_{ACQi}					-0.1336	-0.19	-0.4377	-0.2172	-0.247	-0.2486
					(-0.05)	*(-0.08)*	*(-0.18)*	*(-0.09)*	*(-0.1)*	*(-0.11)*
$RSIZE_i$						-0.0545	-0.0422	-0.047	-0.0528	-0.0528
						(-0.83)	*(-0.65)*	*(-0.75)*	*(-0.82)*	*(-0.82)*
DBT_{TGTi}							127.48**	111.288*	107.236*	107.290*
							(2.15)	*(1.93)*	*(1.83)*	*(1.84)*
$CHLNG_i$								204.09***	205.24***	205.26***
								(2.95)	*(2.95)*	*(2.97)*

Cont'd Table 5.4

$VRLTD_i$									-17.309	-17.215
									(-0.39)	*(-0.39)*
D_{2000i}	-27.93	-39.31	-64.40	-67.38	-66.99	-67.34	-60.29	-73.81	-75.70	-75.80
	(-0.27)	*(-0.33)*	*(-0.54)*	*(-0.56)*	*(-0.56)*	*(-0.56)*	*(-0.51)*	*(-0.64)*	*(-0.66)*	*(-0.66)*
D_{2001i}	-21.55	-41.28	-53.65	-54.73	-54.44	-45.48	-45.75	-54.72	-57.39	-57.46
	(-0.21)	*(-0.34)*	*(-0.46)*	*(-0.46)*	*(-0.46)*	*(-0.38)*	*(-0.39)*	*(-0.48)*	*(-0.50)*	*(-0.50)*
D_{2002i}	200.82*	211.29*	187.59	193.01	193.13	191.78	187.27	154.26	148.38	148.36
	(1.87)	*(1.71)*	*(1.54)*	*(1.58)*	*(1.57)*	*(1.56)*	*(1.55)*	*(1.31)*	*(1.25)*	*(1.25)*
D_{2003i}	-4.750	1.7852	-13.98	-14.19	-14.07	-14.89	7.7189	-18.06	-18.94	-19.12
	(-0.04)	*(0.01)*	*(-0.11)*	*(-0.11)*	*(-0.11)*	*(-0.12)*	*(0.06)*	*(-0.15)*	*(-0.15)*	*(-0.16)*
D_{2004i}	-25.75	-33.86	-58.98	-46.87	-47.00	-46.83	-51.54	-53.44	-55.09	-55.18
	(-0.24)	*(-0.28)*	*(-0.49)*	*(-0.38)*	*(-0.38)*	*(-0.38)*	*(-0.43)*	*(-0.46)*	*(-0.47)*	*(-0.47)*
D_{2005i}	-23.09	-30.62	-70.88	-68.57	-68.07	-59.50	-37.98	-77.08	-80.63	-80.70
	(-0.21)	*(-0.24)*	*(-0.57)*	*(-0.55)*	*(-0.54)*	*(-0.47)*	*(-0.31)*	*(-0.64)*	*(-0.66)*	*(-0.67)*
D_{2006i}	-8.401	-24.17	-46.52	-47.27	-46.66	-43.93	-29.12	-31.49	-33.57	-33.64
	(-0.08)	*(-0.20)*	*(-0.38)*	*(-0.39)*	*(-0.38)*	*(-0.36)*	*(-0.24)*	*(-0.27)*	*(-0.28)*	*(-0.29)*
D_{2007i}	-47.89	-65.37	-61.03	-60.75	-60.68	-59.76	-44.69	-62.31	-71.83	-71.77
	(-0.44)	*(-0.52)*	*(-0.50)*	*(-0.49)*	*(-0.49)*	*(-0.48)*	*(-0.37)*	*(-0.53)*	*(-0.59)*	*(-0.60)*
D_{2008i}	-31.57	-49.44	-64.94	-53.32	-53.08	-48.55	-20.83	-25.88	-33.08	-33.09
	(-0.29)	*(-0.39)*	*(-0.51)*	*(-0.42)*	*(-0.41)*	*(-0.38)*	*(-0.16)*	*(-0.21)*	*(-0.26)*	*(-0.27)*
N	162	162	162	162	162	162	162	162	162	162
F-statistic	1.83*	1.76*	2.23**	2.11**	1.94**	1.85**	2.08**	2.61***	2.46***	2.63***
P-value	*0.0611*	*0.0682*	*0.0147*	*0.0186*	*0.0291*	*0.0358*	*0.0139*	*0.0014*	*0.0023*	*0.0014*
R^2	0.1252	0.139	0.1899	0.1968	0.1968	0.2018	0.2343	0.2914	0.2924	0.2924
Adj R^2	0.0569	0.0601	0.1046	0.1036	0.0955	0.093	0.1219	0.1799	0.1734	0.181

Moreover, by looking at the results of the conducted regressions in Table 5.4, it can be noticed that both the explanatory power and the significance of the model is improved by omitting the variable EM_{ACQi}. Specifically, the *Adj R-Squared* improves from 0.17 in regression (9), which contains the test variable EM_{ACQi}, to 0.18 in regression (10), from which EM_{ACQi} is excluded, while the *F-statistic* increases from 2.46 to 2.63, respectively.

The overall findings of the analysis of pure cash deals fails to show any significant relation between acquirers' pre-merger earnings management and the acquisition premium. This evidence adds greater robust support for the earlier findings regarding the noted significant relation in non-cash deals.

5.5.2.3. Specification Tests

5.5.2.3.1. Heteroscedasticity and Robustness Check

One important assumption of an OLS model is that each error term has a similar variance, i.e they are *homoscedastic*. Therefore, the inferences made based on results that exhibit heteroscedastic error terms may be misleading (Gujarati 2004; Stock and Watson 2007).

In this study, the diagnostic tests of Breusch and Pagan (1979) and Cook and Weisberg (1983) is performed in order to assess the underlying assumption of homoscedasticity. The testing procedure outcome indicates that the null hypothesis regarding potential heteroscedasticity as *Ho: Constant variance* being rejected. [60] As a remedial measure, White's (1980)

[60] This test is performed using STATA package with the command "*estat hottest*".

heteroscedasticity-corrected variances or *robust standard errors* [61] are used to reduce the likelihood of producing results that may lead to erroneous inferences (Gujarati 2004).

The results for the robust models after applying *White's* procedure are reported in Table 5.5. Interestingly, the inferences made regarding the tested independent variable (EM_{ACQi}) hold for all regressions after heteroscedasticity has been corrected for. The robust *t-value* of the coefficient estimate γ_1 remains very significant for all regressions at a confidence interval of 1%, ranging between 2.87 in regression (5) to 3.28 in regressions (2) and (3). Accordingly, it could be stated that the positive relationship between the acquirer's pre-merger earnings management and the acquisition premium in non-cash deals is robust.

Similarly, the results of the control variables ROE_{ACQi}, ROE_{TGTi}, TOE_{ACQi} and DBT_{TGTi} in Table 5.5 are robust and the robust *t-values* improved for their coefficient estimates in all regression. Moreover, the robust model results show that the variable IB_{TGTi} has a significant positive coefficient estimate (γ_4) in the regressions in which it is included, namely regressions (5) to (10). Table 5.5 reports estimated values for the coefficient γ_4 that range between 0.0054 (robust *t-value* = 1.92) in model (4) and 0.006 ($2.17 \geq$ robust *t-value* ≥ 2.21) in models (7) to (10). This finding indicates that target firm's hiring M&A advisors has a positive impact on the acquisition premium, which is consistent with previous studies (see, for example, Porrini 2006; Chahine and Ismail 2009).[62]

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[61] This procedure is also called *heteroscedasticity-consistent covariance matrix estimators*, according to the seminal paper of White (1980).

[62] The M&A advisory fees (IB_{TGTi}) can proxy not only for the existence of the M&A advisors, but also for the quality of the consultancy service provided to the target firm in aiding the management's decision and its bargaining position. The results hold even after replacing the control variable IB_{TGTi} by a dummy variable that indicates the use of M&A advisors by the target.

Table 5.5 The heteroscedasticity -corrected regression results of the acquisition premium (*t-4w*) for the non-cash deals

The following table presents the results of the regression model $PR_i = \gamma_0 + \gamma_1 EM_{ACQi} + \gamma_2 ROE_{ACQi} + \gamma_3 ROE_{TGTi} + \gamma_4 IB_{TGTi} + \gamma_5 TOE_{ACQi} + \gamma_6 RSIZE + \gamma_7 DBT_{TGTi} + \gamma_8 CHLNG_i + \gamma_9 VRLTD_i + \sum_{y=1}^{m=9} \gamma_{y+9} D_{y+1999} + \varepsilon_i$ using White's (1980) heteroscedasticity-corrected variances (i.e. robust standard errors). PR_i indicates the acquisition premium in a controlling M&A deal based on shares price index four weeks prior to the announcement date, EM_{ACQi} indicates the acquirer's earnings management proxied by the abnormal accruals during the last three quarters prior to deal's announcement date, ROE_{ACQi} indicates the acquirer's return on equity ratio prior to the deal's announcement date and calculated based on the acquirer's performance in the preceding 12 months, ROE_{TGTi} indicates the target's return on equity ratio prior to the deal's announcement date and calculated based on the target's performance in the preceding 12 months, IB_{TGTi} indicates the advisory fees of investment banking services used by the target firm for completing the deal, TOE_{ACQi} indicates the acquirer's toehold ownership interest in the target firm prior to the controlling M&A deal, and 0 otherwise, $RSIZE_i$ indicates the size of the deal relative to the acquirer's size, DBT_{TGTi} indicates the target's debt ratio before the deal, $CHLNG_i$ is a dummy variable which takes 1 if the deal was challenged (i.e. by having multiple bidders), and 0 otherwise and $VRLTD_i$ is a dummy variable which takes 1 if the deal was a synergistic vertical integration M&A, and 0 otherwise. Numbers in parentheses represent *robust t-values* in two-tailed tests. The symbols (*****), (******) and (*******) denote confidence interval of 10, 5 and 1 percent, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Constant	73.46***	74.48***	74.62***	73.64***	73.54***	73.57***	81.00***	81.07***	86.69***	77.94***
	(6.92)	*(6.51)*	*(6.56)*	*(7.06)*	*(7.11)*	*(6.97)*	*(8.88)*	*(8.77)*	*(5.87)*	*(6.07)*
EM_{ACQi}	1.329***	1.394***	1.395***	1.255***	1.238***	1.269***	1.209***	1.223***	1.240***	
	(3.08)	*(3.28)*	*(3.28)*	*(2.91)*	*(2.87)*	*(3.03)*	*(2.92)*	*(2.92)*	*(2.9)*	
ROE_{ACQi}		5.628***	5.712***	5.539***	5.727***	5.685***	5.672***	5.733***	5.635***	5.401***
		(7.17)	*(7.17)*	*(6.79)*	*(7.00)*	*(7.05)*	*(7.44)*	*(7.41)*	*(7.24)*	*(7.16)*
ROE_{TGTi}			-0.54***	-0.73***	-0.73***	-0.75***	-0.74***	-0.73***	-0.72***	-0.69***
			(-10.73)	*(-6.73)*	*(-6.96)*	*(-6.46)*	*(-6.64)*	*(-6.6)*	*(-6.34)*	*(-6.19)*
IB_{TGTi}				0.0053*	0.0054**	0.0054**	0.006**	0.006**	0.006**	0.006**
				(1.92)	*(2.05)*	*(2.04)*	*(2.21)*	*(2.19)*	*(2.13)*	*(2.17)*
TOE_{ACQi}					-2.21***	-2.19***	-2.36***	-2.37***	-2.32***	-2.47***
					(-3.70)	*(-3.63)*	*(-3.58)*	*(-3.62)*	*(-3.51)*	*(-3.78)*
$RSIZE_i$						0.030	0.031	0.030	0.027	-0.00
						(0.54)	*(0.56)*	*(0.53)*	*(0.49)*	*(-0.03)*

Cont'd Table 5.5

DBT_{TGTi}							-13.9*	-13.8*	-13.7*	-15.8*
							(-1.84)	*(-1.82)*	*(-1.8)*	*(-1.85)*
$CHLNG_i$								-8.09	-8.13	-5.06
								(-1.01)	*(-0.99)*	*(-0.57)*
$VRLTD_i$									-5.56	-4.04
									(-0.52)	*(-0.38)*
D_{2000i}	-29.81**	-28.67**	-28.8**	-27.92**	-27.82**	-28.37**	-29.2***	-28.8***	-29.72***	-20.67**
	(-2.44)	*(-2.21)*	*(-2.23)*	*(-2.31)*	*(-2.31)*	*(-2.33)*	*(-2.84)*	*(-2.75)*	*(-2.89)*	*(-2.24)*
D_{2001i}	-35.63***	-32.99**	-33.38**	-36.51***	-35.04	-35.63***	-37.21***	-36.4***	-37.56***	-31.22***
	(-2.68)	*(-2.36)*	*(-2.39)*	*(-2.67)*	*(-2.57)*	*(-2.61)*	*(-3.1)*	*(-2.98)*	*(-2.97)*	*(-2.84)*
D_{2002i}	-58.40***	-58.84***	-61.30***	-61.1***	-60.9***	-61.22***	-64.2***	-64.36***	-65.65***	-54.50***
	(-3.6)	*(-3.52)*	*(-3.61)*	*(-3.62)*	*(-3.62)*	*(-3.61)*	*(-4.11)*	*(-4.09)*	*(-4.09)*	*(-3.85)*
D_{2003i}	-23.24	-22.84	-23.16	-21.79	-17.08	-17.99	-15.20	-15.28	-16.33	-.9301
	(-1.35)	*(-1.3)*	*(-1.32)*	*(-1.22)*	*(-0.95)*	*(-0.98)*	*(-0.94)*	*(-0.93)*	*(-0.98)*	*(-0.06)*
D_{2004i}	-44.71***	-45.4***	-46.***	-46.06***	-45.97***	-46.26***	-47.19***	-47.26***	-48.79***	-40.52***
	(-3.31)	*(-3.21)*	*(-3.23)*	*(-3.38)*	*(-3.39)*	*(-3.37)*	*(-3.76)*	*(-3.73)*	*(-3.6)*	*(-3.35)*
D_{2005i}	-46.25***	-47.67***	-47.83***	-46.88***	-46.77***	-47.***	-48.2***	-47.43***	-48.94***	-37.76***
	(-3.75)	*(-3.65)*	*(-3.68)*	*(-3.84)*	*(-3.85)*	*(-3.83)*	*(-4.57)*	*(-4.43)*	*(-4.37)*	*(-4.15)*
D_{2006i}	-42.87***	-43.98***	-44.15***	-42.11***	-41.97***	-42.53***	-43.08***	-42.61***	-44.32***	-32.02***
	(-3.12)	*(-3.04)*	*(-3.06)*	*(-2.99)*	*(-2.99)*	*(-3.02)*	*(-3.45)*	*(-3.41)*	*(-3.25)*	*(-2.64)*
D_{2007i}	-52.93***	-54.17***	-50.70***	-50.24***	-50.1***	-50.43***	-51.59***	-51.66***	-52.69***	-45.81***
	(-4.51)	*(-4.3)*	*(-4.19)*	*(-4.51)*	*(-4.53)*	*(-4.47)*	*(-5.72)*	*(-5.65)*	*(-5.43)*	*(-6.34)*
D_{2008i}	-46.81***	-47.72***	-47.94***	-49.86***	-47.81***	-48.11***	-48.22***	-48.31***	-48.93***	-37.8***
	(-3.78)	*(-3.63)*	*(-3.66)*	*(-3.99)*	*(-3.87)*	*(-3.86)*	*(-4.62)*	*(-4.58)*	*(-4.48)*	*(-4.14)*
N	262	262	262	262	262	262	262	262	262	262
F-statistic	3.18***	7.21***	23.04***	24.98***	25.32***	23.81***	29.23***	27.97***	26.34***	29.62***
P-value	*0.0008*	*<0.000*	*<0.000*	*<0.000*	*<0.000*	*<0.000*	*<0.000*	*<0.000*	*<0.000*	*<0.000*
R^2	0.1024	0.1285	0.1386	0.1448	0.1571	0.1581	0.171	0.1721	0.1741	0.1354

Table 5.6 Multicollinearity tests

The following table provides the results of the multicollinearity tests of the independent variables. Panel A of this table presents *Pearson's* correlation coefficients (r) (left bottom) as well as *Spearman's* correlation coefficients (ρ). Panel B of the table presents the variance inflation factors of the independent variables along with tolerance level (*1/VIF*). Highly correlated variables will have Tolerance ≤ 10 percent. EM_{ACQi} indicates the acquirer's earnings management proxied by the abnormal accruals during the last three quarters prior to deal's announcement date, ROE_{ACQi} indicates the acquirer's return on equity ratio prior to the deal's announcement date and calculated based on the acquirer's performance in the preceding 12 months, ROE_{TGTi} indicates the target's return on equity ratio prior to the deal's announcement date and calculated based on the target's performance in the preceding 12 months, IB_{TGTi} indicates the advisory fees of investment banking services used by the target firm for completing the deal, TOE_{ACQi} indicates the acquirer's toehold ownership interest in the target firm prior to the controlling M&A deal, and 0 otherwise, $RSIZE_i$ indicates the size of the deal deal relative to the acquirer's size, DBT_{TGTi} indicates the target's debt ratio before the deal, $CHLNG_i$ is a dummy variable which takes 1 if the deal was challenged (i.e. by having multiple bidders), and 0 otherwise and $VRLTD_i$: is a dummy variable which takes 1 if the deal was a synergistic vertical integration M&A, and 0 otherwise.

Panel A: Pearson and Spearman's Correlation Matrix

		EM_{ACQi}	ROE_{ACQi}	ROE_{TGTi}	IB_{TGTi}	TOE_{ACQi}	$RSIZE_i$	DBT_{TGTi}	$CHLNG_i$	$VRLTD_i$		
EM_{ACQi}		1.0000	-0.1112	-0.0955	-0.0037	0.0525	-0.0903	0.0148	0.0181	0.084		EM_{ACQi}
ROE_{ACQi}		-0.0606	1.0000	0.4956	0.1646	-0.0100	0.0048	-0.0254	0.0377	-0.058		ROE_{ACQi}
ROE_{TGTi}		-0.0333	0.1205	1.0000	0.2135	0.0317	-0.0734	-0.1331	0.0465	-0.005		ROE_{TGTi}
IB_{TGTi}	Pearson's (r)	0.0573	0.0129	-0.0103	1.0000	0.1067	-0.0133	-0.0844	0.0698	0.036	Spearman's (ρ)	IB_{TGTi}
TOE_{ACQi}		0.0102	0.0171	-0.0001	0.1535	1.0000	0.0855	-0.0055	-0.0245	-0.013		TOE_{ACQi}
$RSIZE_i$		-0.1034	0.0281	0.0053	-0.0107	-0.0137	1.0000	0.0725	-0.1227	-0.044		$RSIZE_i$
DBT_{TGTi}		0.0995	-0.0149	0.0460	-0.0533	-0.0105	0.0963	1.0000	-0.0814	-0.032		DBT_{TGTi}
$CHLNG_i$		0.0063	0.0251	-0.0145	-0.0365	-0.0224	-0.0435	-0.0379	1.0000	-0.050		$CHLNG_i$
$VRLTD_i$		0.1545	-0.0602	0.0299	-0.0444	-0.0636	-0.0356	0.0371	-0.0502	1.0000		$VRLTD_i$

Panel B: Variance Inflation Factors for Independent Variables

	EM_{ACQi}	ROE_{ACQi}	ROE_{TGTi}	IB_{TGTi}	TOE_{ACQi}	$RSIZE_i$	DBT_{TGTi}	$CHLNG_i$	$VRLTD_i$	*Mean*
VIF	1.12	1.20	1.17	1.04	1.28	1.08	1.17	1.05	1.04	*1.05*
Tolerance	0.895858	0.832705	0.85263	0.962487	0.778649	0.922509	0.853789	0.950497	0.962642	*0.956664*

Interestingly, the coefficient of the vertical relatedness dummy variable ($VRLTD_i$) remains insignificant even in the robust model despite the theoretical importance of this variable in determining the potential synergies to be extracted in a M&A deal. However, this result is not dissimilar to the findings of Haunschild (1994).[63]

5.5.2.3.2. Multicollinearity Test

Another important assumption of linear regression models is that the regressors (i.e. independent variables) are independent and are not highly correlated (Stock and Watson 2007). In the model of this study, no evidence related to multicollinearity problems is found among the model's independent variables. Two procedures are employed to assess potential multicollinearity - namely the variance inflation factors' (*VIF*) test and a correlation matrix.

Table 5.6 presents a matrix of *Pearson* and *Spearman's* correlation coefficients for the independent variables. The correlation coefficients of all pairs of independent variables are statistically insignificant indicating that there is no multicollinearity problem among them with the highest absolute value of *Pearson's* correlation coefficient, $Corr_r$ (EM_{ACQi}, $VRLTD_i$) being equal to 0.1545, while the highest *Spearman's* rank correlation coefficient is $Corr_{rho}$ (ROE_{ACQi}, ROE_{TGTi}) = 0.4956, both with insignificant *P-values*.

Furthermore, the output of the *VIF* test for the independent variables does not indicate any material multicollinearity problem. The *VIF* factors range between 1.04 and 1.28 with a mean value of 1.12, as presented in Table 5.6. Therefore, it could be stated that no evidence of the

[63] Haunschild's (1994) study did not find a significant relationship between the vertical relatedness of the acquired target and the acquisition premium.

existence of multicollinearity is detected for the regressors of the model such that they are sufficiently independent.[64]

5.5.3. Further Investigation

For additional robustness tests over the findings of this chapter, the relationship between the acquirer's pre-merger earnings management and acquisition premium in non-cash deals is re-assessed applying three different sensitivity measures.

5.5.3.1. Redefining the Dependent Variable as (PR_{t-1w})

The first sensitivity analysis concerns re-defining the independent variable itself via using a different time horizon in selecting the base prices used for calculating the acquisition premium. As mentioned in section 5.4.1.1, the base prices for calculating the acquisition premium should be selected within a reasonably adequate time prior to the announcement date, which varies among different previous studies (see, for example, Porrini 2006; Chahine and Ismail 2009; Wickramanayake and Wood 2009).

Taking a shorter time horizon for selecting the base prices makes it less likely that the calculation of the acquisition premium is biased against any extraneous events (Brown and Warner 1980). Instead of using base prices four weeks (PR_{t-4w}) before the deal announcement date, the acquisition premium is re-calculated using base prices one week (PR_{t-1w}) before the

[64] Normally, a *VIF* value should have a factor below 10.0 (i.e. *Tolerance* > 0.10) to conclude that there is no indication of multicollinearity. The *Tolerance* factor is the inverse of *VIF* (1/ *VIF*). The tolerance for the independent variables ranges between 0.778649 and 0.962642 with a mean value of 0.896843. These values of *VIF* tolerance level are good indication since they should not be below 0.1 for good models.

announcement date, reflecting the market valuation for the acquiring and target firms closer to the official announcement date.[65] A comparison of the descriptive statistics per year for the two definitions of the acquisition premium is presented in Table 5.7, where it can be noticed that $PR_{t\text{-}1w}$ is, on average, slightly lower than $PR_{t\text{-}4w}$ with a mean (median) value of 34.29 (26.19) compared to 36.23 (27.82), respectively.

Table 5.7 Comparison of acquisition premium: two different time horizons

The following table compares the calculation of acquisition premia offered in the non-cash deals using prices indices of two different time horizons (*t-1w vs. t-4w*), where *t-1w* indicates using shares prices index one week before the deal's announcement while *t-4w* indicates using shares prices index one week before the deal's announcement.

		Acquisition Premium (*t-4w*)			Acquisition Premium (*t-1w*)		
Year	*N*	*Mean*	*STDV*	*Median*	*Mean*	*STDV*	*Median*
1999	7	89.806	64.450	58.530	67.390	36.112	64.140
2000	57	44.878	54.144	33.200	37.992	44.675	28.700
2001	45	35.032	47.648	40.890	30.860	49.599	27.800
2002	23	17.649	51.938	18.200	21.007	47.344	23.320
2003	24	51.163	66.143	32.700	39.268	51.082	28.550
2004	27	29.067	40.892	22.430	31.104	52.852	20.100
2005	30	31.344	32.894	25.415	47.025	65.596	27.930
2006	16	33.653	34.784	26.885	31.286	25.243	28.615
2007	20	19.581	21.780	24.475	20.070	21.374	21.035
2008	13	33.789	28.977	28.380	29.167	26.795	23.460
Total	262	36.227	48.209	27.815	34.287	47.332	26.185

[65] Using base prices closer to the deal's announcement date may seem much more realistic but also prices of closer dates are more likely to reflect an event-specific informational leakage.

Table 5.8 The heteroscedasticity-corrected regression results of the acquisition premium (*t-1w*) in non-cash deals

The following table presents the results of the regression model $PR1w_i = \gamma_0 + \gamma_1 EM_{ACQi} + \gamma_2 ROE_{ACQi} + \gamma_3 ROE_{TGTi} + \gamma_4 IB_{TGTi} + \gamma_5 TOE_{ACQi} + \gamma_6 RSIZE + \gamma_7 DBT_{TGTi} + \gamma_8 CHLNG_i + \gamma_9 VRLTD_i + \sum_{y=1}^{m=9} \gamma_{y+9} D_{y+1999} + \varepsilon_i$ using White's (1980) heteroscedasticity-corrected variances (i.e. robust standard errors). $PR1w_i$ indicates the acquisition premium in a controlling M&A deal based on shares price index one week prior to the announcement date, EM_{ACQi} indicates the acquirer's earnings management proxied by the abnormal accruals during the last three quarters prior to deal's announcement date, ROE_{ACQi} indicates the acquirer's return on equity ratio prior to the deal's announcement date and calculated based on the acquirer's performance in the preceding 12 months, ROE_{TGTi} indicates the target's return on equity ratio prior to the deal's announcement date and calculated based on the target's performance in the preceding 12 months, IB_{TGTi} indicates the advisory fees of investment banking services used by the target firm for completing the deal, TOE_{ACQi} indicates the acquirer's toehold ownership interest in the target firm prior to the controlling M&A deal, and 0 otherwise, $RSIZE_i$ indicates the size of the deal relative to the acquirer's size, DBT_{TGTi} indicates the target's debt ratio before the deal, $CHLNG_i$ is a dummy variable which takes 1 if the deal was challenged (i.e. by having multiple bidders), and 0 otherwise and $VRLTD_i$ is a dummy variable which takes 1 if the deal was a synergistic vertical integration M&A, and 0 otherwise. Numbers in parentheses represent *robust t-values* in two-tailed tests. The symbols (*****), (******) and (*******) denote confidence interval of 10, 5 and 1 percent, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Constant	61.9***	62.60***	62.81***	62.47***	62.41***	62.37***	68.20***	68.24***	71.64***	63.18***
	(4.06)	*(3.96)*	*(3.96)*	*(4.02)*	*(4.03)*	*(4.1)*	*(4.86)*	*(4.83)*	*(3.94)*	*(4.78)*
EM_{ACQi}	1.291***	1.325***	1.336***	1.284***	1.275***	1.229***	1.182***	1.189***	1.199***	
	(3.27)	*(3.36)*	*(3.37)*	*(3.19)*	*(3.16)*	*(2.99)*	*(2.88)*	*(2.85)*	*(2.81)*	
ROE_{ACQi}		3.875***	3.986***	4.062***	4.163***	4.228***	4.217***	4.249***	4.189***	3.963***
		(2.87)	*(2.87)*	*(2.96)*	*(3.11)*	*(3.24)*	*(3.08)*	*(3.11)*	*(3.04)*	*(3.15)*
ROE_{TGTi}			-0.56***	-0.60***	-0.60***	-0.56***	-0.56***	-0.55***	-0.55***	-0.51***
			(-10.49)	*(-5.2)*	*(-5.18)*	*(-4.75)*	*(-5.02)*	*(-5.01)*	*(-4.81)*	*(-4.55)*
IB_{TGTi}				0.0008	0.0008	0.0008	0.001	0.001	0.001	0.001
				(0.28)	*(0.29)*	*(0.3)*	*(0.46)*	*(0.45)*	*(0.44)*	*(0.46)*
TOE_{ACQi}					-1.19	-1.22	-1.35*	-1.36*	-1.33	-1.47*
					(-1.55)	*(-1.59)*	*(-1.66)*	*(-1.67)*	*(-1.63)*	*(-1.83)*
$RSIZE_i$						-0.04	-0.04	-0.04	-0.04	-0.07***
						(-1.46)	*(-1.44)*	*(-1.45)*	*(-1.55)*	*(-3.32)*
DBT_{TGTi}							-10.9	-10.9	-10.8	-12.8
							(-1.37)	*(-1.36)*	*(-1.35)*	*(-1.47)*

Cont'd Table 5.8										
$CHLNG_i$								-4.10	-4.13	-1.16
								(-0.36)	*(-0.36)*	*(-0.1)*
$VRLTD_i$									-3.37	-1.90
									(-0.32)	*(-0.18)*
D_{2000i}	-24.14	-23.37	-23.66	-23.31	-23.26	-22.41	-23.07	-22.88	-23.42	-14.6
	(-1.51)	*(-1.41)*	*(-1.42)*	*(-1.43)*	*(-1.43)*	*(-1.4)*	*(-1.62)*	*(-1.59)*	*(-1.63)*	*(-1.65)*
D_{2001i}	-29.30*	-27.50	-27.96	-27.28	-26.49	-25.5	-26.82	-26.45	-27.10	-20.97*
	(-1.68)	*(-1.52)*	*(-1.54)*	*(-1.49)*	*(-1.44)*	*(-1.41)*	*(-1.62)*	*(-1.57)*	*(-1.58)*	*(-1.73)*
D_{2002i}	-44.4**	-44.62**	-44.54**	-43.93**	-43.84**	-43.42**	-45.8**	-45.86**	-46.64**	-35.86***
	(-2.35)	*(-2.31)*	*(-2.27)*	*(-2.22)*	*(-2.21)*	*(-2.22)*	*(-2.5)*	*(-2.49)*	*(-2.51)*	*(-2.59)*
D_{2003i}	-25.31	-24.	-25.35	-22.83	-20.30	-18.90	-16.71	-16.75	-17.39	-2.491
	(-1.42)	*(-1.36)*	*(-1.38)*	*(-1.23)*	*(-1.08)*	*(-1.01)*	*(-1.01)*	*(-1.01)*	*(-1.04)*	*(-0.19)*
D_{2004i}	-28.90	-29.34	-29.48	-29.27	-29.22	-28.78	-29.50	-29.5	-30.47	-22.47
	(-1.53)	*(-1.52)*	*(-1.5)*	*(-1.5)*	*(-1.5)*	*(-1.5)*	*(-1.61)*	*(-1.6)*	*(-1.59)*	*(-1.48)*
D_{2005i}	-16.94	-17.83	-18.08	-17.69	-17.63	-16.48	-17.04	-16.63	-17.5	-6.73
	(-0.87)	*(-0.89)*	*(-0.91)*	*(-0.9)*	*(-0.89)*	*(-0.84)*	*(-0.94)*	*(-0.9)*	*(-0.92)*	*(-0.43)*
D_{2006i}	-34.44**	-35.10**	-35.37	-33.74**	-33.66**	-32.80**	-33.23	-33.00**	-34.03**	-22.13**
	(-2.09)	*(-2.07)*	*(-2.08)*	*(-2)*	*(-2)*	*(-1.97)*	*(-2.22)*	*(-2.19)*	*(-2.15)*	*(-2.13)*
D_{2007i}	-40.98**	-41.47**	-37.88**	-37.61**	-37.5**	-37.24**	-38.15***	-38.18***	-38.81***	-32.15***
	(-2.54)	*(-2.48)*	*(-2.31)*	*(-2.34)*	*(-2.34)*	*(-2.36)*	*(-2.74)*	*(-2.72)*	*(-2.7)*	*(-4.15)*
D_{2008i}	-36.82**	-37.35**	-37.6**	-37.73**	-36.6**	-36.16**	-36.24**	-36.29**	-36.66**	-25.92**
	(-2.19)	*(-2.15)*	*(-2.17)*	*(-2.2)*	*(-2.14)*	*(-2.14)*	*(-2.38)*	*(-2.37)*	*(-2.36)*	*(-2.49)*
N	262	262	262	262	262	262	262	262	262	262
F-statistic	1.99***	2.62***	17.51***	15.36***	14.88***	13.87***	16.03***	15.65***	14.75***	18.27***
P-value	*0.0352*	*0.0037*	*<0.000*	*<0.000*	*<0.000*	*<0.000*	*<0.000*	*<0.000*	*<0.000*	*<0.000*
R^2	0.074	0.0844	0.0919	0.0901	0.0935	0.0956	0.1032	0.1034	0.1041	0.0697

The regression model with robust standard errors (see Table 5.5) is replicated using $PR_{t\text{-}1w,i}$ as the dependent variable and the new results are reported in Table 5.8. Similar to the results reported earlier, the coefficient estimate of EM_{ACQi} remains very significant (*P-value* < 1 percent) in all regressions, ranging between 1.18 (robust *t-value* = 2.99) in regression (7) to 1.34 (robust *t-value* = 3.37) in regression (3).

The overall results of the variable $PR_{t\text{-}1w}$ in the regression in Table 5.8 provide robust evidence over the positive relationship between the acquirer's pre-merger earnings management and the acquisition premium in non-cash M&A deals. This relationship holds under different approaches used for calculating the acquisition premium.

5.5.3.2. Controlling for the Acquirer's Pre-merger Share Performance

In another sensitivity measure, the acquirer's pre-merger share performance is used as an additional control variable in the regression model in order to partially control for other factors that may influence the valuation process (Lubatkin 1987), such as a potential *hubris effect* (Roll 1986). Roll (1986) develops a hypothesis that offers a potential explanation for the overpayment by bidders in M&A deals. In essence, he argues that acquiring firms infected with hubris (i.e. managerial overconfidence) end up paying too much for their target firms. However, Roll (1986) provides neither an exact definition of the hubris effect nor does he suggest a clear measurement methodology.

Hubris, in a M&A context, is explained by Hayward and Hambrick (1997) as the exaggerated confidence of management, which results in managers overestimating their ability to manage the acquired firm. Likewise, Antoniou et al. (2008) attributes the hubris effect to the over-

optimism of acquiring firm managers regarding their past performance such that they overestimate the post-merger economic gains required in order to recover the high premia paid. Following Hayward and Hambrick (1997) and Antoniou et al. (2008), the acquirer's pre-merger share performance is considered to be one of the most important sources of managerial overconfidence and one of the most commonly used proxies for management's hubris.

Following this literature (such as, Puffer and Weintrop 1991; Hayward and Hambrick 1997; Antoniou et al. 2008) the acquirer's pre-merger CAR is calculated in order to measure the acquirer's pre-merger performance, which is then used as a proxy for hubris in this study's model. A positive (negative) pre-merger abnormal performance indicates that the market has adjusted its expectations regarding the future performance upwards (downwards).

Using daily returns sourced via the *Eventus* database, the *Market Model* (*MM*) is used as a benchmark, following the seminal work of Fama et al. (1969), for calculating the normal returns by estimating the following parameters using the market portfolio:

$$\tilde{R}_{ACQi,t} = \alpha_{ACQi} + \beta_{ACQi}\tilde{R}_{m,t} + \tilde{u}_{ACQi,t}$$

Where $\tilde{R}_{ACQi,t}$ is the total return of the security $ACQi$ at the time t, $\tilde{R}_{m,t}$ is the market return at time t, $\tilde{u}_{ACQi,t}$ is the error term, $\alpha_{ACQi}$is the intercept and β_{ACQi} is the beta coefficient of the market return. The abnormal return is calculated by taking the difference between the actual return of the security and the expected return according to the Market Model (hereafter MM) (Strong 1992):

$$\hat{u}_{ACQi,t} = R_{ACQi,t} - (\hat{\alpha}_{ACQi} + \hat{\beta}_{ACQi}R_{m,t})$$

Table 5.9 The heteroscedasticity-corrected regression results of the acquisition premium (*t-4w*) for the non-cash deals after controlling for the pre-merger acquirer's share performance

The following table presents the results of the regression model $PR_i = \gamma_0 + \gamma_1 EM_{ACQi} + \gamma_2 ROE_{ACQi} + \gamma_3 ROE_{TGTi} + \gamma_4 IB_{TGTi} + \gamma_5 TOE_{ACQi} + \gamma_6 RSIZE + \gamma_7 DBT_{TGTi} + \gamma_8 CHLNG_i + \gamma_9 VRLTD_i + \gamma_{10} CAR_{ACQi} + \sum_{y=1}^{m=9} \gamma_{y+10} D_{y+1999} + \varepsilon_i$ using White's (1980) heteroscedasticity-corrected variances (i.e. robust standard errors). PR_i indicates the acquisition premium in a controlling M&A deal based on shares price index four weeks prior to the announcement date, EM_{ACQi} indicates the acquirer's earnings management proxied by the abnormal accruals during the last three quarters prior to deal's announcement date, ROE_{ACQi} indicates the acquirer's return on equity ratio prior to the deal's announcement date and calculated based on the acquirer's performance in the preceding 12 months, ROE_{TGTi} indicates the target's return on equity ratio prior to the deal's announcement date and calculated based on the target's performance in the preceding 12 months, IB_{TGTi} indicates the advisory fees of investment banking services used by the target firm for completing the deal, TOE_{ACQi} indicates the acquirer's toehold ownership interest in the target firm prior to the controlling M&A deal, and 0 otherwise, $RSIZE_i$ indicates the size of the deal relative to the acquirer's size, DBT_{TGTi} indicates the target's debt ratio before the deal, $CHLNG_i$ is a dummy variable which takes 1 if the deal was challenged (i.e. by having multiple bidders), and 0 otherwise, $VRLTD_i$ is a dummy variable which takes 1 if the deal was a synergistic vertical integration M&A, and 0 otherwise and CAR_{ACQi} indicates the cumulative abnormal returns of the acquirer's share for the estimation period (-100,-10) and using the Market Model as a benchmark. Numbers in parentheses represent *robust t-values* in two-tailed tests. The symbols (*****), (******) and (*******) denote confidence interval of 10, 5 and 1 percent, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Constant	36.80	39.90	44.70**	49.33**	48.8**	48.60**	43.57*	45.0*	52.34**	46.71**
	(1.41)	*(1.60)*	*(2.01)*	*(2.57)*	*(2.52)*	*(2.47)*	*(1.71)*	*(1.80)*	*(2.26)*	*(2.28)*
EM_{ACQi}	1.543***	1.581***	1.622***	1.388***	1.373***	1.411***	1.402***	1.407***	1.439***	
	(2.99)	*(3.12)*	*(3.19)*	*(2.89)*	*(2.87)*	*(3.10)*	*(3.09)*	*(3.10)*	*(3.14)*	
ROE_{ACQi}		3.453	6.026	9.493**	9.184**	9.116**	8.813**	9.407***	9.448***	8.227**
		(1.60)	*(1.54)*	*(2.41)*	*(2.36)*	*(2.34)*	*(2.32)*	*(2.82)*	*(2.86)*	*(2.46)*
ROE_{TGTi}			-8.02	-21.4*	-20.0	-19.9	-19.3	-20.8*	-21.3*	-20.2*
			(-0.66)	*(-1.70)*	*(-1.60)*	*(-1.59)*	*(-1.59)*	*(-1.91)*	*(-1.93)*	*(-1.79)*
IB_{TGTi}				-0.0007	-0.0008	-0.0008	-0.0008	-0.0008	-0.0009	-0.0009
				(-1.04)	*(-0.54)*	*(-0.57)*	*(-0.50)*	*(-0.54)*	*(-0.72)*	*(-0.31)*
TOE_{ACQi}					-2.42***	-2.40***	-2.41***	-2.39***	-2.29***	-2.46***
					(-3.70)	*(-3.63)*	*(-3.6)*	*(-3.59)*	*(-3.29)*	*(-3.38)*
$RSIZE_i$						0.027	0.025	0.019	0.016	-0.01
						(0.49)	*(0.46)*	*(0.35)*	*(0.31)*	*(-0.50)*

Cont'd Table 5.9

DBT_{TGTi}							5.143	3.958	3.430	5.517
							(0.32)	*(0.24)*	*(0.21)*	*(0.33)*
$CHLNG_i$								-26.7*	-27.6*	-26.8**
								(-1.92)	*(-1.95)*	*(-2.08)*
$VRLTD_i$									-6.63	-4.29
									(-0.61)	*(-0.39)*
CAR_{ACQi}	25.86	21.56	20.28	23.17	23.02	23.00	23.37	23.79	23.79	27.22
	(1.52)	*(1.11)*	*(1.04)*	*(1.15)*	*(1.14)*	*(1.13)*	*(1.14)*	*(1.16)*	*(1.18)*	*(1.29)*
D_{2000i}	9.611	7.111	1.243	-6.00	-5.283	-5.634	-2.892	-3.980	-5.590	-3.15
	(0.34)	*(0.26)*	*(0.05)*	*(-0.28)*	*(-0.24)*	*(-0.25)*	*(-0.12)*	*(-0.17)*	*(-0.25)*	*(-0.16)*
D_{2001i}	10.54	10.5	3.625	-10.22	-9.204	-9.52	-6.642	-5.3	-7.339	-6.827
	(0.38)	*(0.40)*	*(0.15)*	*(-0.48)*	*(-0.42)*	*(-0.44)*	*(-0.28)*	*(-0.23)*	*(-0.33)*	*(-0.35)*
D_{2002i}	-27.42	-30.15	-40.07	-47.99**	-47.06*	-47.06*	-43.4	-44.91*	-47.40*	-40.05*
	(-0.95)	*(-1.08)*	*(-1.5)*	*(-2.00)*	*(-1.95)*	*(-1.93)*	*(-1.63)*	*(-1.72)*	*(-1.93)*	*(-1.78)*
D_{2003i}	16.19	13.82	6.255	7.340	13.09	12.44	15.30	14.27	12.56	22.60
	(0.55)	*(0.49)*	*(0.25)*	*(0.32)*	*(0.55)*	*(0.51)*	*(0.59)*	*(0.56)*	*(0.51)*	*(0.96)*
D_{2004i}	-7.528	-10.28	-16.04	-19.92	-19.8	-19.8	-17.14	-17.99	-19.68	-16.96
	(-0.27)	*(-0.38)*	*(-0.66)*	*(-0.94)*	*(-0.93)*	*(-0.92)*	*(-0.68)*	*(-0.73)*	*(-0.82)*	*(-0.78)*
D_{2005i}	-13.15	-16.23	-21.75	-26.78	-26.34	-26.86	-24.18	-21.73	-23.66	-17.72
	(-0.50)	*(-0.65)*	*(-0.97)*	*(-1.39)*	*(-1.35)*	*(-1.36)*	*(-1.12)*	*(-1.00)*	*(-1.16)*	*(-0.99)*
D_{2006i}	-8.934	-11.68	-16.90	-21.35	-20.79	-21.12	-18.63	-17.49	-19.40	-12.61
	(-0.33)	*(-0.46)*	*(-0.73)*	*(-1.06)*	*(-1.02)*	*(-1.03)*	*(-0.87)*	*(-0.82)*	*(-0.94)*	*(-0.70)*
D_{2007i}	-13.45	-16.93	-21.95	-26.54	-26.33	-26.30	-23.80	-24.63	-26.2	-25.16
	(-0.50)	*(-0.66)*	*(-0.94)*	*(-1.32)*	*(-1.3)*	*(-1.28)*	*(-1.06)*	*(-1.12)*	*(-1.26)*	*(-1.38)*
D_{2008i}	-18.49	-21.29	-26.20	-26.22	-25.44	-25.33	-23.39	-24.04	-24.55	-21.59
	(-0.71)	*(-0.86)*	*(-1.18)*	*(-1.38)*	*(-1.32)*	*(-1.3)*	*(-1.12)*	*(-1.17)*	*(-1.21)*	*(-1.20)*
N	188	188	188	188	188	188	188	188	188	188
F-statistic	2.33**	4.71***	4.91***	6.37***	8.22***	7.57***	7.42***	7.95***	6.97***	7.02***
P-value	*0.0108*	*<0.000*	*<0.000*	*<0.000*	*<0.000*	*<0.000*	*<0.000*	*<0.000*	*<0.000*	*<0.000*
R^2	0.1819	0.1901	0.1971	0.2192	0.2316	0.2325	0.2333	0.2422	0.245	0.1993

The cumulative abnormal return of the acquirer's share (CAR_{ACQi}) is calculated using an estimation period (*EP*) of (-100,-10) as follows:

$$CAR_{ACQi} = \sum_{t=-100}^{-10} \hat{u}_{ACQi,t}$$

CAR_{ACQi} is included in the study's model as a control for the pre-merger market performance of the acquirer's share. The results of the regression model after including CAR_{ACQi} are reported in Table 5.9. The coefficient of CAR_{ACQi} shows a positive sign for all regressions, as predicted by the hubris hypothesis, but the robust *t-values* do not indicate a statistical significance.

As reported in Table 5.9, the positive coefficient of EM_{ACQi} holds with very significant robust t-values (*P-value* < 1 percent) in all regressions, indicating additional robustness of the relationship between acquirers' pre-merger earnings management and the acquisition premium in non-cash even after controlling for the acquirer's pre-merger share performance.

5.5.3.3. Controlling for Bear/Bull Markets

As an additional investigation, the regression analysis is replicated after controlling for bear and bull stock markets. Shleifer and Vishny (2003) provide a model suggesting that market valuations impact the decisions of M&A. Likewise, Bouwman et al. (2009) argue that M&A valuation in bear markets should be significantly different from the valuation in bull markets. Consistent with these views, in addition to CAR_{ACQi}, which is computed in the previous section, two categorising dummy variables are used in the regression model to control for bearish ($BEAR_i$) and bullish ($BULL_i$) markets.

Table 5.10 The heteroscedasticity-corrected regression results of the acquisition premium (*t-4w*) for the non-cash deals after controlling for the pre-merger acquirer's share performance and bear/bull markets

The following table presents the results of the regression model $PR_i = \gamma_0 + \gamma_1 EM_{ACQi} + \gamma_2 ROE_{ACQi} + \gamma_3 ROE_{TGTi} + \gamma_4 IB_{TGTi} + \gamma_5 TOE_{ACQi} + \gamma_6 RSIZE + \gamma_7 DBT_{TGTi} + \gamma_8 CHLNG_i + \gamma_9 VRLTD_i + \gamma_{10} CAR_{ACQi} + \gamma_{11} BEAR_i + \gamma_{12} BULL_i + \varepsilon_i$ using White's (1980) heteroscedasticity-corrected variances (i.e. robust standard errors). PR_i indicates the acquisition premium in a controlling M&A deal based on shares price index four weeks prior to the announcement date, EM_{ACQi} indicates the acquirer's earnings management proxied by the abnormal accruals during the last three quarters prior to deal's announcement date, ROE_{ACQi} indicates the acquirer's return on equity ratio prior to the deal's announcement date and calculated based on the acquirer's performance in the preceding 12 months, ROE_{TGTi} indicates the target's return on equity ratio prior to the deal's announcement date and calculated based on the target's performance in the preceding 12 months, IB_{TGTi} indicates the advisory fees of investment banking services used by the target firm for completing the deal, TOE_{ACQi} indicates the acquirer's toehold ownership interest in the target firm prior to the controlling M&A deal, and 0 otherwise, $RSIZE_i$ indicates the size of the deal relative to the acquirer's size, DBT_{TGTi} indicates the target's debt ratio before the deal, $CHLNG_i$ is a dummy variable which takes 1 if the deal was challenged (i.e. by having multiple bidders), and 0 otherwise, $VRLTD_i$ is a dummy variable which takes 1 if the deal was a synergistic vertical integration M&A, and 0 otherwise, CAR_{ACQi} indicates the cumulative abnormal returns of the acquirer's share for the estimation period (-100,-10) and using the Market Model as a benchmark, $BEAR_i$ is a dummy variable which takes 1 if the deal is completed during a bear market (i.e. the bottom quartile of the difference between the market's detrended PE or the current period and the average of past years detrended PE ratio), and 0 otherwise, while $BULL_i$ is a dummy variable which takes 1 if the deal is completed during a bull market (i.e. top quartile of the difference between the market's detrended PE or the current period and the average of past years detrended PE ratio), and 0 otherwise. Numbers in parentheses represent *robust t-values* in two-tailed tests. The symbols (*****), (******) and (*******) denote confidence interval of 10, 5 and 1 percent, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Constant	37.1***	37.81***	35.79***	33.72***	34.19***	33.22***	29.63***	31.09***	35.30***	34.4***
	(9.14)	*(9.26)*	*(8.57)*	*(7.48)*	*(7.5)*	*(7.15)*	*(3.32)*	*(3.47)*	*(2.91)*	*(2.91)*
EM_{ACQi}	1.447***	1.471***	1.511***	1.373***	1.384***	1.455***	1.445***	1.442***	1.465***	
	(2.79)	*(2.86)*	*(2.94)*	*(2.71)*	*(2.73)*	*(3.04)*	*(3.07)*	*(3.05)*	*(3.09)*	
ROE_{ACQi}		2.730	5.378	8.599**	8.432**	8.295**	7.842**	8.335**	8.316**	7.300**
		(1.3)	*(1.41)*	*(2.21)*	*(2.17)*	*(2.14)*	*(2.1)*	*(2.46)*	*(2.46)*	*(2.12)*
ROE_{TGTi}			-8.40	-19.9	-19.1	-18.8	-18.0	-19.5*	-19.7*	-18.9*
			(-0.74)	*(-1.64)*	*(-1.57)*	*(-1.56)*	*(-1.55)*	*(-1.86)*	*(-1.87)*	*(-1.73)*
IB_{TGTi}				-0.0007	-0.0008	-0.0008	-0.0008	-0.0008	-0.0008	-0.0009
				(-1.26)	*(-0.92)*	*(-0.96)*	*(-0.87)*	*(-0.95)*	*(-1.07)*	*(-0.52)*
TOE_{ACQi}					-1.52***	-1.50***	-1.50***	-1.49***	-1.42***	-1.35***
					(-4.72)	*(-4.7)*	*(-4.37)*	*(-4.35)*	*(-3.81)*	*(-3.61)*

Cont'd Table 5.10										
$RSIZE_i$						0.052	0.049	0.044	0.041	0.005
						(0.96)	*(0.90)*	*(0.80)*	*(0.76)*	*(0.15)*
DBT_{TGTi}							9.041	8.111	7.891	9.302
							(0.55)	*(0.49)*	*(0.48)*	*(0.53)*
$CHLNG_i$								-24.0*	-24.7*	-24.7**
								(-1.90)	*(-1.93)*	*(-2.04)*
$VRLTD_i$									-5.40	-3.13
									(-0.50)	*(-0.29)*
CAR_{ACQi}	27.04	23.82	23.42	26.84	26.63	26.57	27.00	27.42	27.53	30.51
	(1.57)	*(1.20)*	*(1.17)*	*(1.31)*	*(1.29)*	*(1.28)*	*(1.30)*	*(1.33)*	*(1.34)*	*(1.43)*
$BEAR_i$	-10.13	-10.65	-9.344	-7.070	-7.706	-7.281	-7.619	-7.94	-7.943	-8.989
	(-1.58)	*(-1.63)*	*(-1.38)*	*(-1.02)*	*(-1.10)*	*(-1.04)*	*(-1.11)*	*(-1.16)*	*(-1.15)*	*(-1.26)*
$BULL_i$	-1.076	0.5815	7.604	12.97	12.33	12.96	8.654	8.458	9.598	5.82
	(-0.04)	*(0.02)*	*(0.33)*	*(0.62)*	*(0.58)*	*(0.60)*	*(0.37)*	*(0.37)*	*(0.44)*	*(0.31)*
N	188	188	188	188	188	188	188	188	188	188
F-statistic	2.91**	7.74***	8.41***	9.35***	12***	10.54***	8.77***	9.23***	8.25***	7.37***
P-value	*0.0231*	*<0.000*	*<0.000*	*<0.000*	*<0.000*	*<0.000*	*<0.000*	*<0.000*	*<0.000*	*<0.000*
R^2	0.1096	0.1131	0.1192	0.139	0.1432	0.1462	0.1483	0.1597	0.1614	0.1127

Table 5.11 The heteroscedasticity-corrected regression results of the acquisition premium (*t-4w*) for the non-cash deals after the inclusion of the target's pre-merger earnings management (EM_{TGTi})

The following table presents the results of the regression model $PR_i = \gamma_0 + \gamma_1 EM_{ACQi} + \omega_0 EM_{TGTi} + \gamma_2 ROE_{ACQi} + \gamma_3 ROE_{TGTi} + \gamma_4 IB_{TGTi} + \gamma_5 TOE_{ACQi} + \gamma_6 RSIZE + \gamma_7 DBT_{TGTi} + \gamma_8 CHLNG_i + \gamma_9 VRLTD_i + \sum_{y=1}^{m=9} \gamma_{y+9} D_{y+1999} + \varepsilon_i$ using White's (1980) heteroscedasticity-corrected variances (i.e. robust standard errors). PR_i indicates the acquisition premium in a controlling M&A deal based on shares price index four weeks prior to the announcement date, EM_{ACQi} indicates the acquirer's earnings management proxied by the abnormal accruals during the last three quarters prior to deal's announcement date, EM_{TGTi} indicates the target's earnings management proxied by the abnormal accruals during the last one quarter prior to deal's announcement date, ROE_{ACQi} indicates the acquirer's return on equity ratio prior to the deal's announcement date and calculated based on the acquirer's performance in the preceding 12 months, ROE_{TGTi} indicates the target's return on equity ratio prior to the deal's announcement date and calculated based on the target's performance in the preceding 12 months, IB_{TGTi} indicates the advisory fees of investment banking services used by the target firm for completing the deal, TOE_{ACQi} indicates the acquirer's toehold ownership interest in the target firm prior to the controlling M&A deal, and 0 otherwise, $RSIZE_i$ indicates the size of the deal relative to the acquirer's size, DBT_{TGTi} indicates the target's debt ratio before the deal, $CHLNG_i$ is a dummy variable which takes 1 if the deal was challenged (i.e. by having multiple bidders), and 0 otherwise and $VRLTD_i$ is a dummy variable which takes 1 if the deal was a synergistic vertical integration M&A, and 0 otherwise. Numbers in parentheses represent *robust t-values* in two-tailed tests. The symbols (*****), (******) and (*******) denote confidence interval of 10, 5 and 1 percent, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Constant	53.136***	53.224***	54.637***	59.932***	59.393***	60.035***	68.703***	68.210***	69.212***
	(2.67)	*(2.66)*	*(2.65)*	*(3.12)*	*(3.02)*	*(3.02)*	*(4.36)*	*(4.20)*	*(3.24)*
EM_{ACQi}	2.0473***	2.0343***	2.0355***	1.7591***	1.7869***	1.7800***	1.5707**	1.5824**	1.5875**
	(3.45)	*(3.41)*	*(3.42)*	*(2.96)*	*(2.97)*	*(2.97)*	*(2.62)*	*(2.63)*	*(2.51)*
EM_{TGTi}	-0.963	-0.970	-1.005*	-0.814	-0.848	-0.883	-0.794	-0.825	-0.827
	(-1.59)	*(-1.6)*	*(-1.74)*	*(-1.39)*	*(-1.43)*	*(-1.47)*	*(-1.36)*	*(-1.4)*	*(-1.39)*
ROE_{ACQi}		1.6585	3.1982	4.6718	8.3617	8.9527	-1.252	-0.919	-0.993
		(0.09)	*(0.15)*	*(0.21)*	*(0.36)*	*(0.38)*	*(-0.05)*	*(-0.04)*	*(-0.04)*
ROE_{TGTi}			-3.055	-7.681	-7.194	-7.713	-2.613	-2.115	-2.174
			(-0.23)	*(-0.46)*	*(-0.43)*	*(-0.47)*	*(-0.15)*	*(-0.12)*	*(-0.13)*
IB_{TGTi}				0.0070**	0.0069**	0.0069**	0.0084**	0.0084**	0.0084**
				(2.14)	*(2.00)*	*(2.00)*	*(2.40)*	*(2.39)*	*(2.37)*
TOE_{ACQi}					-2.468***	-2.469***	-2.692***	-2.707***	-2.700***
					(-2.89)	*(-2.89)*	*(-2.94)*	*(-2.95)*	*(-2.88)*

Cont'd Table 5.11									
$RSIZE_i$						-0.048	-0.037	-0.044	-0.044
						(-1.14)	*(-0.84)*	*(-0.97)*	*(-0.95)*
DBT_{TGTi}							-17.12	-17.02	-16.97
							(-1.44)	*(-1.43)*	*(-1.41)*
$CHLNG_i$								-15.25	-15.34
								(-1.50)	*(-1.44)*
$VRLTD_i$									-1.042
									(-0.07)
D_{2000i}	-7.379	-7.508	-9.336	-14.60	-14.19	-13.97	-12.86	-11.45	-11.61
	(-0.33)	*(-0.33)*	*(-0.40)*	*(-0.66)*	*(-0.63)*	*(-0.62)*	*(-0.63)*	*(-0.55)*	*(-0.57)*
D_{2001i}	-6.128	-5.252	-7.763	-18.79	-17.30	-17.74	-19.45	-17.87	-18.08
	(-0.28)	*(-0.24)*	*(-0.34)*	*(-0.85)*	*(-0.76)*	*(-0.78)*	*(-0.99)*	*(-0.89)*	*(-0.88)*
D_{2002i}	-60.87**	-60.66**	-62.43**	-71.90***	-70.57***	-70.83***	-74.18***	-73.44***	-73.74***
	(-2.62)	*(-2.58)*	*(-2.55)*	*(-2.99)*	*(-2.89)*	*(-2.88)*	*(-3.43)*	*(-3.34)*	*(-3.24)*
D_{2003i}	-5.474	-4.970	-7.036	-15.92	-6.746	-6.702	-4.337	-3.434	-3.558
	(-0.21)	*(-0.18)*	*(-0.24)*	*(-0.57)*	*(-0.23)*	*(-0.23)*	*(-0.16)*	*(-0.12)*	*(-0.13)*
D_{2004i}	-20.71	-20.76	-22.18	-28.76	-28.12	-28.20	-29.70	-29.18	-29.37
	(-0.87)	*(-0.87)*	*(-0.93)*	*(-1.29)*	*(-1.24)*	*(-1.23)*	*(-1.41)*	*(-1.36)*	*(-1.34)*
D_{2005i}	-24.74	-24.89	-26.52	-32.07	-31.69	-31.01	-30.90	-27.85	-28.04
	(-1.19)	*(-1.18)*	*(-1.2)*	*(-1.53)*	*(-1.48)*	*(-1.43)*	*(-1.62)*	*(-1.41)*	*(-1.40)*
D_{2006i}	-9.705	-9.716	-11.32	-17.31	-16.55	-16.01	-16.06	-13.47	-13.71
	(-0.39)	*(-0.39)*	*(-0.44)*	*(-0.69)*	*(-0.65)*	*(-0.62)*	*(-0.69)*	*(-0.57)*	*(-0.58)*
D_{2007i}	-29.38	-29.88	-31.44	-37.50*	-37.17*	-37.71*	-37.56**	-37.09*	-37.14
	(-1.42)	*(-1.42)*	*(-1.44)*	*(-1.8)*	*(-1.75)*	*(-1.76)*	*(-2.03)*	*(-1.96)*	*(-1.95)*
D_{2008i}	-31.36	-31.37	-32.83	-42.65**	-39.00*	-39.39*	-39.78**	-39.23**	-39.35
	(-1.49)	*(-1.48)*	*(-1.5)*	*(-2.09)*	*(-1.85)*	*(-1.85)*	*(-2.21)*	*(-2.12)*	*(-2.11)*
N	154	154	154	154	154	154	154	154	154
F-statistic	3.48	3.82	2.94	4.94	7.73	7.4	6.25	5.85	5.73
P-value	*0.0003*	*0.0001*	*0.0008*	*<0.000*	*<0.000*	*<0.000*	*<0.000*	*<0.000*	*<0.000*
R^2	0.1697	0.1810	0.1706	0.1797	0.1937	0.1957	0.214	0.2177	0.2178

Following Bouwman et al.'s (2009) concept, the market's (i.e. *S&P500*) detrended annual price-earnings (*P/E*) ratio is used to indicate the mood of the stock market. $BEAR_i$ is indicated by the bottom quartile of the difference between the detrended *P/E* of the year of interest and the average of the past 5 years, while $BULL_i$ is indicated by the top quartile.

The results of the regression model after controlling for the market mood are presented in Table 5.10. The coefficient of EM_{ACQi} does not show any change ranging between 1.37 (robust *t-value* = 2.71) in regression (4) and 1.51 (robust *t-value* = 2.94) in regression (3), remaining very significant at a 1% confidence interval.

5.5.3.4. Earnings Management by the Target Firms:

The framework of this study considers the implication of the acquirer's pre-merger earnings management in particular. However, one could argue that the rationale of the study's theoretical model can be extended by including the potential pre-merger earnings management of the target firm as well. This argument should expect to find a negative relationship between the target's pre-merger earnings management and the acquisition premium paid by the acquirer. For this reason, a further investigation is conducted by including the pre-merger abnormal accruals of the target, EM_{TGTi}. Interestingly, the regression results reported in Table 5.11 reveal some evidence for the expected relationship.

The coefficient estimate of EM_{TGTi} shows the expected negative sign in all regressions, but this fails to show statistically significance in any model except for regression (3), where both ROE_{ACQi} and ROE_{TGTi} are controlled for, in addition to the acquirer's earnings management and the year categorisation dummies. The coefficient estimate of EM_{TGTi} in regression (3) is -1.005

with significance at a 10%confidence interval with a robust *t-value* = -1.74, while the robust *t-value* of the coefficient estimates in the other regressions range between -1.36 in regression (7) and -1.60 in regression (2).

This weak evidence on the negative relationship between targets' earnings management and the acquisition premium can be explained initially by the inconsistent evidence of earnings management undertaken by target firms before a M&A, which is attributed to the time constraint facing the target's management (Erickson and Wang 1999). The target's management is normally not aware about a potential M&A plan before they are approached by an acquirer. Therefore, it cannot plan and manage the target's accruals efficiently in advance before the deal's official announcement.

5.6. Summary and Conclusion

The existing literature emphasises that capital markets provide incentives for event-specific earnings management when firms issue equity shares to raise capital, such as SEO (see, for example, Rangan 1998; Teoh et al. 1998), IPO (see, for example, DuCharme et al. 2001) and M&A (see, for example, Louis 2004; Gong et al. 2008). The common justification of this argument is that firms attempt to reduce their cost of capital (equity) and try to mitigate the dilutive effect on the existing shareholders' interests (Hansen 1987; Fields et al. 2001). Therefore, the specific research area of event-specific earnings management implicitly considers Sloan's (1996) naive investor hypothesis - by assuming that earnings management cannot be uncovered by market participants - in order to validate the managerial motivation argument. However, investors' naivety could not be the only explanatory factor.

By considering the M&A transacting context, this chapter addresses the question of how pre-merger earnings management is handled by users. This study challenges the naive investors' hypothesis and its relevance to the theoretical rationalisation of earnings management in a M&A context. It offers a counter-theory suggesting that M&A participants are relatively sophisticated - rather than naive – users, since there are informed agents (i.e. managements) acting on behalf of investors (i.e. the shareholders). Correspondingly, this chapter hypothesises that the pre-merger earnings management exhibited by an acquiring firm, on which evidence has been repeatedly documented in the literature, can be detected and the acquirer's share price will be discounted by a target firm that agrees a non-cash deal.

The theoretical model developed in this chapter predicts that the magnitude of acquirer's pre-merger earnings management should be positively associated with the acquisition premium in M&A deals that are completed through issuing equity shares to the target shareholders. This hypothesis is empirically assessed in a regression model of the acquisition premium after considering a number of control variables that may have a potential impact in determining the acquisition premium.

The findings of this study document very significant and robust empirical evidence showing that the acquirer's pre-merger earnings management and acquisition premium are positively related. This evidence is obtained from a sample of non-cash M&A, which holds under different sets of control variables. The reported evidence remains significant after applying several sensitivity tests, such as employing different time horizons in order to define the acquisition premium, controlling for the pre-merger share performance impact on valuation and considering the effect of bear and bull markets.

Consistent with the prediction of our hypothesis, no evidence is found for the impact of the acquirer's pre-merger earnings management on the acquisition premium when the M&A deal itself is paid for using 100% cash, as the acquirers lack the motivation to inflate their accruals. The findings of this chapter also indicate evidence that acquirers with higher pre-merger profitability can afford to offer higher premia. The shareholders of such an acquirer with higher profitability measures are more likely to approve offering a higher acquisition premium to the sought target (Roll 1986; Hayward and Hambrick 1997).

It might be argued that our hypothesis can also be used to predict that a target's pre-merger earnings management will be detected by the acquiring firm and reflected in the M&A valuation. This argument can only be valid if target firms are initially fortunate enough to be aware about the potential M&A deals so as to be able to effectively manage their earnings in the accounting periods that precede the M&A announcement. However, this is not normally the case and the existence of a target's pre-merger earnings management is hardly reported by either the earlier chapter of this study (i.e. in Chapter 3) or by the previous research in the literature (see, for example, Eddey and Taylor 1999; Erickson and Wang 1999; Koumanakos et al. 2005; Baik et al. 2007). Accordingly, the targets' restricted ability to inflate their accruals justifies the weak empirical evidence over the negative relation between the targets' pre-merger earnings management and the acquisition premium that is reported earlier in this chapter.

In addition, this chapter documents some evidence related to the negative relationship between the acquisition premium and an acquirer's toehold ownership in the target, the target's debt ratio and the target's profitability. Since the acquirer's toehold in the target is inversely related

to the incremental percentage for obtaining a controlling interest in the target, there will be a lower quantity demanded for the target's shares and thus we will see a lower equilibrium price and lower premium offered (Stulz 1988; Bugeja and Walter 1995; Wickramanayake and Wood 2009). Our evidence of a negative association between target's debt ratio and acquisition premium is consistent with Crawford and Lechner's (1996) predictions as they argue that the target firm's attractiveness decreases with the level of the leverage in its capital structure. Reporting evidence of an inverse relation between the target's profitability and the acquisition premium is consistent with the notion that merging with poorly managed targets is more likely to create greater post-merger value. Therefore, an acquirer's management is more confident and willing to pay higher premia given the higher potential M&A gains (Lang et al. 1989; Servaes 1991; Bugeja and Walter 1995).

To conclude, non-cash acquirers, which adopt income-increasing pre-merger earnings management, pay higher acquisition premia in completing their M&A deals. Although this evidence may be of interest to researchers, M&A advisors and regulators, it can be interpreted in two different ways.

Firstly, it could be as a result of the inefficiency of the acquirer's management team such that their efforts are not beneficial due to the target's ability to detect and adjust its acquirer's earnings management. Given the acquirers' endeavours to reduce their cost of capital via earnings management prior to issuing equity in non-cash M&A's, it could be said that the success of managing earnings and, consequently, influencing the firm's market valuation does not necessarily imply that merging targets are also naively mislead. Therefore, the target firms' ability to uncover the cosmetic inflation of their acquirers' pre-merger earnings would signal a

bargaining advantage that they would demand a higher share swap-ratio (i.e. premium) in order to compensate for the potential overvaluation of the acquirer's share so as to avoid the adverse selection problem. This explanation directly challenges the naive investor hypothesis in the M&A context and further suggests that acquirers' efforts to manage earnings prior to non-cash M&A deal are wasteful.

Or secondly, it could be argued that the acquiring firm's management are efficient, planning certain bids such that it may appear a high premium is being offered, but in effect it is done at no extra real cost. An acquiring firm management may decide to plan earnings management in order to temporarily inflate the share price. Thus, a higher (nominal) premium can be offered to a the target in order to secure the success of the bid such that the firm successfully completes the M&A deal, but it is the acquirer which actually knows the real acquisition premium, based on the real value of the acquiring firm after neutralising the manipulation.

Chapter 6. Concluding Remarks

Chapter 6

Concluding Remarks

This research has investigated earnings management within a structured sample design using a M&A context in the US. It offers three empirical studies that contribute to three streams of literature – these being the literature related to event-specific earnings management, corporate debt-contracting and the evidence of non-cash M&A valuation – through addressing three main empirical questions. The first question of whether firms near M&A manage their earnings and whether this practice has changed after SOX is addressed in the first empirical study presented in Chapter 3. The second study examines whether debt-financing has implications on event-specific earnings management as addressed in Chapter 4. Finally, Chapter 5 presents the third empirical study, which challenges the effectiveness of earnings management in a M&A context by addressing the question of whether acquirers' pre-merger earnings management can be uncovered and adjusted by the transacting targets.

The extant literature of the *event-specific earnings management* has focused on detecting and investigating the consequences of earnings management around particular corporate events (i.e. a structured sample design) such as those that involve the issuance of equity (i.e. IPO, SEO and M&A), where management is more likely to have motivations to influence the reported earnings. Chapter 3 of this research presents the first empirical study, which has assessed the differences of pre-merger earnings management in quarterly reports by acquiring and target firms in pre- and post-SOX eras. As hypothesised, the evidence provided in this regard suggests a strong tendency on the acquirer's side to manage their earnings upwards before

completing non-cash deals, while weak evidence is reported on the target's side. More importantly, pre-merger earnings management does not seem to be significantly different between pre- and post-SOX eras, despite the assertions that the enactment of SOX was aimed at improving the reporting quality and the containment of earnings management practices (Cohen et al. 2008; Zhou 2008; Bartov and Cohen 2009; Wilson 2009; Ghosh et al. 2010; Iliev 2010).

Hence, three implications of these findings can be of importance to academics, practitioners and standard setters. First, even though there has been compliance with the provisions of SOX outlining the corporate responsibility for both annual and quarterly reports of public firms, interim reports are normally not audited by independent auditors. Thus, managers relatively have greater room for discretion and a better chance to manipulate quarterly statements while this manipulation can be reconciled in the annual statements (Jeter and Shivakumar 1999; Yang and Krishnan 2005). In other words, if managers excessively reported discretionary accruals at one quarter, they could revise - or even reverse – the manipulation of accruals at a later quarter so the level of accruals seems reasonable in the annual statements.[66] Quarterly earnings management, relative to annual earnings management, seem to be judged with more tolerance, according to Grasso et al's (2009) survey of managers' perceptions on earnings management after the enactment of SOX.

[66] Normally, the impact of earnings management is *transient*, meaning that the effect of discretionary accruals on earnings of a given accounting period has a *reversal effect* on earnings of a future period (Chung et el. 2002).

The second implication is related to the relevance of SOX to M&A. Over and beyond the greater corporate governance and better internal control measures requested by SOX, the law led to stronger due diligence and a more intense use of advisors for M&A deals (see, for example, Madura and Ngo 2010). Therefore, it could be argued that the setting of M&A activity creates a greater opportunity to manage earnings, given that managers' resourcefulness for planning and altering accounting numbers is exclusively much greater in the case of M&A after SOX, where longer planning and greater involvement of M&A advisors have been documented (Madura and Ngo 2010).

The third implication is methodological in nature and relates to the metrics of earnings management. In cross-sectional models of accruals (including the one employed in this research), earnings management is detected relatively to the average level of normal accruals in peer firms at the time of estimation. So, the change in the general level of accruals due to SOX, for example, will not be captured by the common cross-sectional models of accruals in event-specific earnings management studies.[67] The magnitude of pre-merger earnings management may even appear more intensified[68] in a post-SOX context because (peer) firms' in general have adopted *conservative* reporting policies since the enactment of SOX (see Ashbaugh-Skaife et al. 2008; Cohen et al. 2008; Zhou 2008).

[67] This is similar to a recent study published in the Journal of Corporate Finance by Chahine et al. (2011), entitled "*The Effects of Venture Capital Syndicate Diversity on Earnings Management and Performance of IPOs in the US and UK: An Institutional Perspective*".

[68] In Chapter 4, a post-SOX dummy is regressed on earnings management in a linear model and the coefficient is significantly positive indicating that the pre-merger abnormal accruals seem to have a higher estimation in post-SOX era (see section 4.5.3 for details).

This research also adds to the literature of event-specific earnings management by focusing on the impact of leverage in particular, as shown in the second empirical investigation presented in Chapter 4. The literature of leverage with earnings management in general is very controversial as there are two poles apart in views backed with theory and evidence. In this research, an inverse relation between the pre-merger income-increasing earnings management levels and the industry-adjusted leverage of the non-cash acquiring firms is documented as predicted by Jensen's (1986) control hypothesis. However, the importance of this contribution lies in two key points: 1) appreciating the role of *industry-adjustment* when using the leverage proxy in this type of studies, and 2) using a structured test sample that controls for the *firms' motivation* to manage earnings. As discussed in Chapter 2, corporate events that involve equity issuance represent capital market motivations to management to manipulate accruals (see section 2.3.1). The impact of leverage has been examined for unstructured samples of firms with random motivations of earnings management while in this study earnings management motivation is arguably consistent and intentional for all firms in the testing sample. This contribution leads to a better understanding of how a firm makes an accounting choice when it does favour one choice for its economic incentives but at the same time it is under creditors' monitoring pressures.

Earnings management studies - especially those conducted in a M&A context (such as Erickson and Wang 1999; Louis 2004; Koumanakos et al. 2005; Baik et al. 2007; Botsari and Meeks 2008; Gong et al. 2008)- usually focus on detecting earnings management without verifying whether earnings management has achieved its intended goal i.e. manipulating users' perceptions. In fact, their evidence seems only to indicate whether the managerial team has

succeeded in manipulating what is reported on *paper*, but fails to outline how seriously this would influence the users' *perceptions* - especially the sophisticated ones. Motivated by this research gap, Chapter 5 presents the third empirical study, which addresses the question of how pre-merger earnings management undertaken by an acquiring firm is perceived and processed by its target firm in a deal which includes equity in the payment structure.

The naivety of investors seems to be the preferred theorem in the literature especially after proving it repetitively in documented evidence by several studies in contexts such as SEO and IPO (See, for example, Sloan 1996; Rangan 1998; Teoh et al. 1998; DuCharme et al. 2001). In fact, assuming the naivety of investors in earnings management research is in accordance with the rationale of the motivations of implementing earnings management. In other words, managers conceal their earnings manipulation behind the *asymmetrical distribution of information*, which exists between the preparers (i.e. the management) and the users (i.e. investors). Chapter 5 of this thesis benefits from this view by developing a counter-argument to the literature from a M&A context, where the transacting process allows the information asymmetry problem between parties to be minimised (i.e. relative to IPO and SEO contexts). The support to this argument is obtained by documenting robust evidence of higher acquisition premia in deals where acquiring firms have adopted income-increasing earnings management before offering their equity shares in paying off their targets.

The evidence shown within Chapter 5 has several implications to the researchers in this area, the M&A advisors and the regulators as the findings carry at least two interpretations. On the one hand, the acquirers' managerial teams are inefficient given that despite the success of acquirers in exercising pre-merger earnings management, their endeavours proved to be

unsuccessful in effectively reducing the cost of capital in non-cash M&A, since the firms becoming targets for M&A can be informed enough to uncover and reverse such manipulation. Therefore, the naivety assumption for the target firms should be abolished. On the other hand, the acquirers' managerial teams can also be viewed as efficient, given that the acquirer itself has been successful in using pre-merger upward earnings management to become able to offer unbeatable or attractive premia to target firms at no extra real cost.

Irrespective of the different interpretations, this study sheds light on a potential problem related to dealing with the calculated values of acquisition premium. Unlike cash premia, acquisition premia in non-cash deals are provided based on the market valuation – not the valuating of transacting parties – for the acquiring and the target firms.[69] Therefore, such a *provisional* valuation in non-cash deals requires special attention by the interested users when comparing between cash and non-cash acquisition premia.

However, the evidence presented in this thesis has been empirically obtained. The positivist orientation of this research implies that the collected evidence does not suggest that firms should follow specific procedures or an optimal method to report their earnings. Rather, the emphasis is on explaining and predicting the managerial practices when they report the earnings. Hence, this thesis helps to understand why, when and which firms may decide to choose particular accounting methods and engage earnings management and how users may react to the adopted accounting practices.

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[69] In this thesis, specifically in Chapter 5, the non-cash acquisition premia, which are available on the databases and calculated based on the market valuation of the acquiring and the target firms, are referred to *nominal premia*.

In terms of potential limitations, concerns regarding data, generalisability and scope can be outlined herein. This research is based on samples taken solely from the US and, hence, extending generalisations to other countries should be done with extra care. Further, it is noteworthy to remember that the period of the study, which is around the enactment of SOX, has experienced several major corporate scandals that have all caused huge damage to capital markets.

Additionally, many public firms made a decision to go private after SOX due to the costly regulatory requirements (Leuz 2007). This exposes the sample to a type of survival bias, given that only firms that afford to stay public are selected in the post-SOX sample. The datasets used in this research are obtained from different sources, which might affect the consistency of the merged datasets. Primarily, the M&A deal-related data is obtained from *Thomson ONE Banker* while the firms' data for calculating earnings management proxies and other variables are obtained from *Compustat*.

In addition, the scope of the first empirical investigation presented in Chapter 3 is limited to documenting the differences in the pre-merger earnings management between pre- and post-SOX periods and, therefore, generalising of the findings may not be applicable to the different types of studies in the broader area of earnings management.

Regarding the accruals model adopted in this research, the estimation of the normal accruals is accomplished cross-sectionally, as recommended by Kothari et al (2005). Thus, the results of this approach are likely to be affected by the overall market's reporting attitude (i.e. conservative versus aggressive), given that peer firms reflect the market's attitude. Having

said that, the cross-sectional results are still better than the results of time-series approach, which are more likely to produce large abnormal accruals for firms with higher growth rates during the estimation period (Kothari et al. 2005).[70]

Finally, this research stimulates a number of researchable ideas and opens more avenues for future investigation. For instance, annual data in a concurrent sample can be used to extend the first empirical study presented in Chapter 3 by conducting a comparison between results around SOX for the audited and the unaudited earnings. Moreover, this research focused on public acquiring and target firms while a further study may investigate how the results of acquirers that acquire private targets differ, due to the different levels of information asymmetry. Another possibility for future research is examining earnings management for firms involved with other relevant events (i.e. SEO, IPO or MBO) around SOX to assess the generalisability of the findings of Chapter 3.

In addition, the second empirical study presented in Chapter 4 can provide a platform for an expanded study that may introduce corporate governance indicators in a similar research setting while assessing the creditors controlling hypothesis in samples with potential pre-event earnings management. Besides, the evidence of the association between pre-merger earnings management and acquisition premium, which is provided by the third empirical study presented in Chapter 5, has not been reported previously and may need to be re-assessed in a wider M&A samples from different countries. Another further contribution can be made to the broader literature by investigating the pre-merger earnings management practices after

[70] Kothari et al (2005, p.174) provide more discussion on this point.

adopting some emerging advances in earnings management area of research such as the developing methods of measuring earnings management suggested by researchers such as the discretionary revenues approach by Stubben (2010) and the approach of incorporating accruals' reversals by Dechow et al (2011).

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