# EARNINGS MANAGEMENT IN ACQUIRED COMPANIES

by

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# Dedication

*To my beloved mother, Maria, and partner, Tim, many thanks for your love, support and encouragement throughout my doctoral studies in Leeds.*

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# **Abstract**

Mergers and acquisitions (M&A) are very important corporate events for both acquirers and targets, and the quality of public accounting information has a significant role in mergers and acquisitions decisions. Acting on the shareholders' behalf or pursuing their self-interests, targets' managers have strong incentives to manipulate reported earnings prior to a deal in order to boost the stock price and generate higher gains for shareholders and themselves. Consistent with this view, researchers have dedicated much effort to examining whether acquirers and targets undertake earnings manipulation around takeovers.

The objective of this thesis is to examine whether UK publicly listed targets engage in accruals and real-activity earnings management prior to M&A, and the consequences this has on targets' shareholder wealth, in particular deal premium and stock return. Earnings management can occur through two main channels: accruals earnings management and real-activity earnings management. These two main earnings management tactics differ in their opacity, cost and the effect they cause to stock price performance prior to M&A (Roychowdhury et al., 2012). Most of the previous studies on this subject have focused exclusively on accruals earnings management, however, the evidence shows that opportunistic accruals earnings management is not a common practice among targets in M&A. More recent research on earnings management provides evidence that firms use multiple earnings manipulation strategies based on

accruals and real-activities (e.g., Graham et al., 2005; Roychowdhury, 2006; Cohen and Zarowin, 2010; Zang, 2011), and managers prefer real-activities manipulation over accruals earnings manipulation as a way to increase reported earnings (Graham et al., 2005).

The first empirical study of this thesis examines whether UK publicly listed targets attempt to manipulate earnings via accruals prior to a deal, and further, investigates the relationship between the deal premium and the targets' earnings management behaviour. The results of the accruals tests under the cross-sectional modified-Jones model and performance-matched model, and using either the balance-sheet approach or the cash-flow approach, indicate that, on average, targets do not manage earnings upward prior to mergers and acquisitions. Furthermore, the analysis of the relationship between earnings management and deal premium provides evidence that the deal premium and the targets' abnormal accruals are negatively related, which is consistent with the view that acquirers take into consideration the quality of targets' earnings in making takeover decisions (e.g., Anilowski et al., 2009; Raman et al., 2013). The evidence in this study also suggests that the deal premium constrains targets' accruals earnings management and acts as a strong disincentive to manipulate earnings. Consequently, the cost of detection explanation for the lack of earnings management by UK targets appears capable of explaining this relationship between the deal premium and the abnormal accruals of targets.

The second empirical study builds on the results of the previous research, which finds no evidence of accruals manipulation by UK targets in M&A, and explores a potential explanation of this phenomenon. Specifically, this study examines whether firm diversification has an impact on earnings management by targets in M&A. An explicit distinction between industrial and geographical diversification is made in this study. Prior research provides evidence that the mode of diversification, such as

industrial vs. geographical, can explain the difference in the correlation between discretionary accruals and diversification due to whether or not they are in different industry segments and/or whether business units are located in different countries (Kim and Kim, 2001). Using a panel data framework for a sample of publicly listed targets, the results of this empirical study suggest that industrial diversification mitigates earnings management prior to mergers and acquisitions. In addition, the results also show that a combination of industrial and geographical diversification alleviates earnings management. However, there is no clear empirical evidence that geographical diversification facilitates or mitigates earnings management. These results are consistent with those reported in Jiraporn et al. (2008) and El Mehdi and Seboui (2011), who find that industrial diversification decreases earnings management by US firms.

Finally, the third empirical study investigates the earnings management behaviour of UK targets in M&A, in particular combined and simple strategies based on accruals and real-activities, and the impact of earnings management on targets' stock overvaluation at the time of a deal. Prior literature provides evidence that at times of heightened scrutiny, such as M&A, earnings management via accruals is unlikely to be a dominant source of overvaluation (e.g., Cohen and Zarowin, 2010; Roychowdhury et al., 2012). Consistent with this view, the results of this study, which were derived from a panel data regression analysis, show that if targets engage in income-increasing earnings management, they are more likely to use combined strategies of earnings management via both accruals and real-activities simultaneously rather than simple strategies based solely on either accruals or real-activities. Furthermore, managers' propensity to engage in combined strategies of earnings management prior to M&A is significantly higher than the propensity for accruals earnings management, despite the high and long-term costs of this earnings management method. Furthermore, the stock return tests performed in this study provide evidence that firms which exhibit evidence of

combined earnings management strategies tend to be the most overvalued targets prior to M&A which is consistent with those results reported by Roychowdhury et al. (2012).

To sum up, UK publicly listed targets are more likely to utilise combined earnings management strategies based on accruals and real-activities prior to a takeover, and these targets' shareholders appear to gain the most if they sell their shares before the deal announcement. However, accruals earnings management as a sole method of earnings manipulation is not a widespread practice in UK mergers and acquisitions, and the deal premium constrains the targets' accruals earnings management behaviour. If earnings manipulation by targets is detected, acquirers might adapt their takeover strategies by adjusting the deal price downward. Finally, industrial diversification mitigates earnings management by UK targets prior to mergers and acquisitions.

Given the significant negative wealth consequences of both accruals and real-activity earnings manipulation, the findings of this thesis emphasise the fact that targets' shareholders, board of directors and auditors, as well as financial advisors need to be alert to managers attempting to engage in earnings management via accruals, but also carefully monitor real-activities. Furthermore, investors, acquirers and financial analysts should be fully aware of the existence and severity of targets' stock overvaluation when they make or facilitate important investment decisions.

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# List of Abbreviations

AIM          Alternative Investment Market

CEO          Chief Executive Officer

CFO          Chief Financial Officer

GAAP          Generally Accepted Accounting Principles

EU          European Union

IAS          International Accounting Standards

IFRS          International Financial Reporting Standards

IPO          Initial Public Offerings

LSE          London Stock Exchange

M&A          Mergers and Acquisitions

OLS          Ordinary Least Squares

R&D          Research & Development Expenditure

SEC          Securities Exchange Commission

SEO          Seasoned Equity Offerings

SIC          Standard Industrial Classification

SG&A          Selling, General and Administrative Expenses

SOX          Sarbanes-Oxley Act

UK          United Kingdom

US          United States of America

# Chapter 1   Introduction

## 1.1 Introduction

The objectives of this thesis are as follows: it first examines whether UK publicly listed targets attempt to manipulate earnings prior to a deal via accruals earnings management in the mergers and acquisitions (M&A) context and investigates the relationship between deal premium and the targets' earnings management behaviour. Secondly, this thesis examines the impact of the targets' diversification on accruals earnings management and following prior research (e.g., Jiraporn et al., 2008; El Mehdi and Seboui, 2011), distinguishes between industrial and geographical diversification. The UK setting has particularly interesting characteristics, the segment reporting requirements have changed dramatically in the last two decades or more, from the UK GAAP SSAP 25 introduced in 1990, to IAS 14R in 2005, and the adoption of IFRS 8 from 2009. As these three generations of segmental reporting differ significantly (Aleksanyan and Danbolt, 2012), their impact on the earnings management behaviour of UK targets may differ over time. Thirdly, this thesis investigates whether targets are more likely to use combined strategies of earnings management via both accruals and real-activities simultaneously, rather than simple strategies based solely on either

accruals or real-activities prior to M&A. Finally, it analyses the consequences of targets'
earnings management behaviour by investigating whether the means of earnings
manipulation, specifically combined vs. simple strategies based on accruals or real-
activities, affects their pre-announcement overvaluation.[1]

Prior research provides evidence that firms use multiple earnings management
strategies based on accruals and real-activities (e.g., Graham et al., 2005; Roychowdhury,
2006; Cohen and Zarowin, 2010; Zang, 2011; Roychowdhury et al., 2012), as a way to
overstate reported earnings (Graham et al., 2005). In the M&A context, the importance
of accounting earnings in equity valuation creates incentives for targets to manipulate
earnings in an attempt to influence short-term stock performance prior to mergers and
acquisitions (Shleifer and Vishny, 2003). Targets' managers, acting in the shareholders'
interests, may be motivated to manage reported earnings upward prior to a takeover to
increase the deal premium for shareholders (e.g., Moeller et al., 2004; Antoniou et al.,
2008). Moreover, targets' managers may agree to merge for private benefits, such as
stock and option appreciation, special cash bonuses (side payments), increased golden
parachutes, CEO position or board membership in the merged company (e.g., Hartzell
et al., 2004).

On the other hand, the timing argument, whether or not the target is aware of
the potential bid until the acquirer initiates negotiations and has the time necessary to
manipulate earnings to increase the stock price before the transaction, has been the
topic of a hot debate in the literature (e.g., Erickson and Wang, 1999). The takeover
process seems to be very complex and competitive, it starts long before the official date

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[1] Consistent with prior literature, a company is defined in this thesis as a target if the percentage owned
by the acquirer before the deal was less than 50% and after the acquisition was higher than 50% (e.g.,
Rossi and Volpin, 2004; Bertrand and Zitouna, 2008; Botsari and Meeks, 2008; Liu et al., 2009; Braga-
Alves et al., 2010; Raman et al., 2013). Furthermore, this thesis focuses only on targets involved in M&A
announced and completed during the period 1990-2008, therefore the unsuccessful attempts of takeovers
are not the scope of this thesis.

announcement and unofficial talks and meetings between potential partners are launched at least a few months in advance. Surprisingly, sometimes the initiative of making itself available for takeover comes straight from the targets, thus they put themselves into the market of mergers and acquisitions. The rumours are spread in the market by the target itself through various channels, such as brokerage houses, investment banks, financial analysts etc. In this line of research, Boone and Mulherin (2007) find that half of the targets were sold via auction in which the target privately contacted potential buyers prior to a public announcement. Shen (2005) and Anagnostopoulou and Tsekrekos (2012) also focus on US "soliciting" and "seeking buyer" firms, respectively, and examine earnings management in theses specific transactions where the targets act as initiators of M&A transactions for a number of reasons, such as leverage, undervaluation, growth, strategy-related or distress (Anagnostopoulou and Tsekrekos, 2012). Furthermore, Anilowski et al. (2009) investigate earnings management in firms acquired via an auction as opposed to negotiation, which could have given them the time and opportunity to influence their reported earnings. This evidence shows that the target is very likely to become aware of a potential takeover long before the transaction offer is made public by the acquirer, therefore the target has enough time to get ready for takeover, so is likely to manipulate earnings in order to increase the stock price and finally the deal price and premium.

Closely related to the timing of earnings management, another argument in favour of the targets engaging in earnings manipulation refers to the finite short life of the company at the time of a deal. Most of targets disappear or are incorporated into a newly merged company after they have been acquired or merged to the acquirer. Debatably, the motivation of potential targets' managers for earnings manipulation is stronger due to their different strategy to increase the bottom line at any expense to boost the stock price prior to a transaction, as opposed to managers of companies with

indefinite life whose main goal is to maximize shareholders' wealth in the long-term. In addition, the costs of detection of earnings manipulation are seemingly lower after the deal takes place as there is no reversal of accruals, which in normal circumstances will lower the reported earnings of the future periods (e.g., Dechow, 1994; Kasznik, 1999; Barton and Simko, 2002; Choy, 2012) and have negative consequences on stock return (e.g., Rangan, 1998; Teoh et al., 1998b).

The evidence on earnings management by targets is mixed and has been provided mostly by US studies (e.g., Easterwood, 1997; Eddey and Taylor, 1999; Erickson and Wang, 1999; Shen, 2005; Anilowski et al., 2009; Anagnostopoulou and Tsekrekos, 2012, 2013). Largely, the mixed findings of prior empirical studies show that opportunistic accruals earnings management is not a common practice among targets in M&A. However, these studies do examine accruals manipulation as a sole earnings management technique and ignore real-activities manipulation as an alternative option undertaken by targets simultaneously. As mentioned by Roychowdhury (2006) and Zang (2011), focusing on accruals earnings management exclusively may not fully explain targets' earnings management behaviour.

Despite numerous studies that have examined accruals earnings management in the M&A context, there are only two US studies that investigate real-activity earnings management in this context (Cohen and Zarowin, 2010; Roychowdhury et al., 2012). Unlike accruals earnings management, real-activities manipulation involves departures from the normal course of operations, has direct cash flow consequences and more importantly, has greater negative effects on the firm's future operating and stock market performance than accruals earnings management (e.g., Graham et al., 2005; Gunny, 2005; Zang, 2011). Managers are willing to manipulate earnings through real-activities rather than accruals, as accruals manipulation is more likely to draw scrutiny from

auditors and regulators and potential litigation penalties than real-activities (e.g., Graham et al., 2005; Cohen and Zarowin, 2010; Zang, 2011; Roychowdhury et al., 2012).

Similar to the US, investigating the UK M&A market is important as this represents an interesting setting in which targets are likely to face similar benefits and costs to manipulate reported earnings prior to M&A due to similarities between these two markets, such as similar legal and institutional environments, large developed stock markets, dispersed corporate ownership and strong investor rights (e.g., La Porta et al., 1997; López de Silanes et al., 1999). However, regulation and corporate governance–related differences between the US and the UK have been identified (e.g., Coffee, 2005), which suggests that there might be expected to be differences with regard to the incidence of earnings management by targets[2].

Furthermore, M&A are important corporate events for both acquirers and targets, as well as the society. As the quality of public accounting information has a crucial role in making M&A decisions (e.g., Anilowski et al., 2009; McNichols and Stubben, 2009), an acquisition or merger has significant consequences for both parties' shareholders, managers, customers, suppliers, investors, as well as the whole economy.

This thesis tests the joint hypothesis of accruals and real-activity manipulation and market inefficiency prior to M&A. Under the managerial opportunism hypothesis, targets' managers have strong incentives to manipulate reported earnings prior to a takeover to boost the stock price and obtain a higher deal premium for shareholders, or extract private benefits from a takeover (Shleifer and Vishny, 2003; Hartzell et al., 2004). Consistent with the efficient market hypothesis which states that stock prices fully reflect all available information (Fama, 1970, 1991), if current earnings are inflated and

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[2] The main differences between the UK and US takeover regulation are highlighted within *Chapter 2 UK M&A Market and Takeover Regulation, Benefits and Costs of Earnings Management.* This chapter also presents the most relevant corporate governance-related differences with regard to external auditors and internal audit committees in the earnings management context.

earnings manipulation is transparent to investors, then stocks are priced adequately prior to the acquisition announcement and markets react positively to the M&A news. As takeovers are regarded as positive NPV value investment projects due to their potential synergies, targets' valuation performed by acquirers normally exceed current stock price and therefore, markets react positively to an M&A announcement. Specifically, this thesis focuses on the semi-strong form efficiency test to examine whether targets' shareholders are able to earn gains from takeovers. Therefore, the expectation in this thesis which is based on an event study is that when a takeover announcement becomes public, there are no abnormal returns for targets around the deal announcement date. If the markets are informationally efficient, all the information is fully incorporated in the stock price in an accurate and timely basis. Systematic evidence of positive abnormal return around the announcement date would be inconsistent with market efficiency.[3]

In an efficient market, the firm's economic value is defined as the present value of expected future cash-flows, discounted at an appropriate rate of cost of capital. Investors use public information provided by financial annual reports, mostly earnings-related information, in conjunction with industry and macro-economic data, to estimate a firm's economic value. Current earnings and its components, namely accruals and cash-flows, are used to estimate future earnings and implicitly future cash-flows. However, accruals manipulation (such as those due to revenue and expense recognition and assets and liabilities overvaluation) does not have direct consequences on contemporaneous cash-flows, but they have negative consequences on future earnings and cash-flows used as a basis for assessing the firm's economic value. One exception

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[3] Among early researchers who discussed and tested market efficiency, Beaver (1981) argues that if the market is any less than strong-form efficient which states that all information (public and private) is fully reflected in stock prices, it is an inefficient market. Consequently, an inefficient market would refer to either the semi-strong form market which is defined as a market that fully reflects all public information, or the weak-form which includes only past information on stock prices.

may be tax expense manipulation which can have direct positive consequences on current cash flows due to reduced tax payments, however if tax aggressiveness is detected this can generate a negative market reaction as a result of potential future cash-flows layouts, expected penalties, and reputational and political costs (Hanlon and Slemrod, 2009). Similar to accruals earnings management, real-activities manipulation (such as price discounts and reduction of discretionary expenditure) can have significant negative long-term consequences on future cash flows. To sum up, the firm's economic value is little affected by earnings management as its consequences on future cash flows are anticipated by investors and already incorporated in the firm's value prior to the takeover.

If the markets are inefficient, there is a divergence between the firm's economic value and its market value as investors fail to accurately anticipate the cash flow consequences of inflated accruals, and therefore, overestimate (underestimate) stock prices. The relation between earnings and stock prices has been widely examined in the literature. Many papers have documented a positive contemporaneous relation between stock prices and earnings which suggested earnings' ability to summarize economic value relevant information (e.g., Ball and Brown, 1968). However, others have provided evidence that investors do not correctly use available information in forecasting future earnings and estimating economic value, which is consistent with the functional fixation hypothesis[4] (Ou and Penman, 1989; Bernard and Thomas, 1990; Hand, 1990). In addition, Sloan (1996) finds that investors "fixate" on earnings and are "fooled" about the economic consequences of accruals manipulation, therefore the markets overprice securities of firms with large and positive accruals. His findings also show that earnings tend to decline over the next three years because of reversal of accruals, earnings

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[4] Contrary to the efficient market hypothesis, the traditional functional fixation hypothesis states that investors are always unsophisticated and do not properly unscramble the information contained in a firm's financial statements when they assess its economic value (Hand, 1990).

manipulation becomes apparent through subsequent earnings disappointments, and the overpricing reverses and stock prices fall under the current level.

If earnings management can be achieved and leads to stock overvaluation in the capital market, it will have a significant negative impact on the economy because M&A transactions will not lead to an efficient reallocation of capital to its most productive uses of resources. This thesis is concerned with strategies of accruals and real-activity earnings management by UK targets prior to M&A, the relationship between accruals earnings manipulation and deal premium as a disincentive of this behaviour, potential causes of earnings management (industrial and geographic diversification) and its shareholder wealth effects (abnormal stock return).

The reminder of this chapter is as follows: section two discusses the relationship between accruals earnings management and deal premium prior to M&A. Section three presents on overview of the expected impact of targets' diversification on accruals earnings management prior to M&A. Section four investigates combined versus simple strategies of earnings management via accruals and real-activities and the relationship between earnings management and targets' stock overvaluation. Section five presents the research issues addressed in this thesis. Section six discusses the significance of this research. Section seven provides the structure of the thesis.

## 1.2 Accruals Earnings Management and Deal Premium in the UK

The first empirical chapter of this thesis (Chapter 5) examines whether UK publicly listed targets attempt to manipulate reported earnings prior to a deal. The

analysis performed in this study focuses on years -2, -1, and 0; specifically the three years preceding a takeover, during which targets are most likely to manage earnings to boost the stock price. Acting in the shareholders' interests, targets' managers have strong incentives to manage reported earnings and implicitly to increase the deal premium for shareholders. In addition, they may attempt to manage earnings prior to a takeover in order to increase the personal benefits which they extract from a deal, such as special cash bonuses, increased golden parachutes, top management positions or board membership in the new merged company (e.g., Shleifer and Vishny, 2003; Hartzell et al., 2004).

However, the constraints and costs associated with targets' accruals manipulation are also potentially high because targets are subject to additional scrutiny by auditors' and regulators' scrutiny. As in the US, auditors in the UK have a crucial role as a corporate governance mechanism in assuring the accuracy and credibility of financial information. Most of the publicly listed financial statements are audited by Big-X audit firms which are perceived as providing high quality audits (relative to non Big-X auditors). [5] In addition to the costs associated with auditors and regulators, there is also a risk of litigation if high levels of earnings management are detected (e.g., Graham et al., 2005; Zang, 2011). However, the UK is regarded as a less litigious environment compared to the US among other Anglo-Saxon countries. Specifically, regarding the accounting standards enforcement the UK listed companies are subject to, the Financial Reporting Review Panel (FRRP) is the main regulatory and enforcement body. As the power of FRRP to penalise companies for earnings manipulation is much more limited than that of SEC in the US (Huijgen and Lubberink, 2005), the litigation-related risk the company directors are exposed to is higher in the US than UK (Seetharaman et al.,

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[5] Beattie et al. (2003) provide evidence that the largest audit firms held over 90% of the UK market (based on their audit fees) in 2002; in addition, this group of Big-X audited all the FTSE 100 companies in the UK and most other listed companies.

2002).[6] This suggests that litigation-related risk may not be such a serious concern for UK targets' managers that will engage in earnings management to boost the stock price prior to a deal.

This chapter also investigates the relationship between deal premium and the targets' earnings management behaviour. Recent literature examining the impact of targets' earnings quality on M&A decisions argues that if earnings manipulation by targets is detected, acquirers take into account the targets' earnings quality and adapt their takeover strategies by adjusting the deal price downward (e.g., Anilowski et al., 2009; Raman et al., 2013).

Given the crucial role of targets' financial information quality in M&A decisions (e.g., Anilowski et al., 2009; McNichols and Stubben, 2009; Raman et al., 2013), researchers have dedicated much effort to examining whether acquirers and targets undertake earnings manipulation prior to takeovers. Prior evidence has been provided mostly by US studies (e.g., Easterwood, 1997; Eddey and Taylor, 1999; Erickson and Wang, 1999; Shen, 2005; Anilowski et al., 2009; Anagnostopoulou and Tsekrekos, 2012, 2013), the results are mixed and the evidence of accruals earnings management has been rather context-dependent. Largely, the mixed findings of prior empirical studies show that opportunistic accruals earnings management is not a common practice among targets in M&A.

Similar to the US market for corporate control, the UK M&A represents an interesting setting in which targets are naturally expected to face similar benefits and

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[6] Seetharaman et al. (2002) argue that there are three main reasons why the litigation-related risk faced by companies is higher in the US than UK: firstly, the legal principle of "fraud on the market" which is accepted in the US but not in the UK, means that the investors can sue a company even when they had not read the financial statements, therefore investors do not have to prove successfully that the company's managers owed them a contractual obligation; secondly, the legal costs of the winner of a lawsuit are paid by the loser and the expected gains from a lawsuit are low which may deter investors from suing a firm; finally, unlike US lawyers, the UK ones generally do not charge fees that are contingent on the damages awarded to their clients, and consequently they have to pay the costs of unsuccessful lawsuits, and class actions are rare as they are difficult to organise in the UK.

costs to manipulate reported earnings prior to M&A as a result of the numerous similarities between these two markets, such as similar legal and institutional environments, large developed stock markets, dispersed corporate ownership and strong investor rights (e.g., La Porta et al., 1997; López de Silanes et al., 1999). However, regulation and corporate governance–related differences between the US and the UK have been identified (e.g., Coffee, 2005), which suggests that the incidence of earnings management in these two countries might be different.

This chapter contributes to the exiting literature by providing evidence on earnings management by UK targets in M&A. Furthermore, the analysis of targets with positive abnormal accruals enhances the extant literature on the role of targets' earnings quality in M&A decisions by examining whether the deal premium constrains targets' accruals earnings management and acts as a strong disincentive to manipulate earnings in the M&A context.

# 1.3 Accruals Earnings Management and UK Firm Diversification

The second empirical chapter of this thesis (Chapter 6) investigates a potential cause of non-occurrence of accruals earnings manipulation by UK targets in M&A by examining whether corporate diversification has an impact on their earnings management behaviour. Prior research analysing the relationship between corporate diversification and accruals earning management explores different hypotheses related to earnings management and corporate diversification. Earlier research documents a value discount associated with diversification and their empirical evidence is consistent

with the informational asymmetry hypothesis (e.g., Lang and Stulz, 1994; Berger and Ofek, 1995; Denis et al., 1997, 2012). The informational asymmetry hypothesis predicts a positive relationship between the degree of accruals earnings management and corporate diversification, which suggests that firms that are industrially and/or geographically diversified are more likely to engage in earnings management than firms that operate in a single segment or country.

More recent research finds empirical evidence consistent with a competing hypothesis, the offsetting accruals hypothesis (e.g., Jiraporn et al., 2008; El Mehdi and Seboui, 2011), which claims that managers of diversified firms have more flexibility to manipulate earnings across business units. However, the resulting total accruals are less volatile, imperfectly correlated and consequently tend to offset each other, leading to a lower degree of discretionary accruals. Therefore, the offsetting accruals hypothesis predicts a negative relationship between the degree of earnings management and diversification. To sum up, the evidence provided by studies investigating both the informational asymmetry hypothesis and the offsetting accruals hypothesis shows that the mode of diversification (industrial vs. geographic) can explain the difference in the correlation between accruals earnings management and diversification (Kim and Kim, 2001).

Therefore, based on the empirical evidence provided by prior research, this chapter focuses on the M&A setting where the occurrence and direction of earnings management is unclear, as targets have strong incentives to manipulate earnings, but the benefits will be offset by costs associated with heightened scrutiny by investors, analysts and financial advisors, as well as greater litigation. This can be to the extent that the accruals generated by different business units are imperfectly correlated and tend to offset each other at the firm's level, therefore, making it more difficult for managers to

manipulate earnings via accruals. Diversified targets are expected to be less aggressive in managing earnings than focused firms.

This chapter contributes to the existing literature about the impact of corporate diversification on earnings management by examining UK targets prior to a deal and making an explicit distinction between industrial and geographical diversification. Unlike prior research which focuses on US firms, this study is concerned with UK ones. The UK setting is particularly interesting as the segment reporting requirements have changed dramatically in over the last two decades, from the UK GAAP SSAP 25 introduced in 1990, to IAS 14R in 2005 (as a result of the EU regulation requiring all listed European companies to report under IAS), and the adoption of IFRS 8 from 2009. These three generations of segmental reporting, SSAP 25, IAS 14R and IFRS 8, differ significantly in terms of the principle of segment diversification, types of segments required for disclosure and the quantity of accounting data to be reported per segment (e.g., Aleksanyan and Danbolt, 2012). Finally, this analysis adds to the existing research by providing new evidence on the offsetting accruals hypothesis.

# 1.4 Accruals and Real-Activity Earnings Management, and UK Targets' Stock Overvaluation

The final empirical chapter of this thesis (Chapter 7) is concerned with the earnings management behaviour of UK targets, in particular combined and simple strategies of earnings manipulation based on accruals and real-activities, undertaken prior to M&A, and the impact of earnings management in inducing stock overvaluation at the time of a deal.

Prior studies that examine accruals earnings management in the M&A context focus mostly on US targets (e.g., Easterwood, 1997; Eddey and Taylor, 1999; Erickson and Wang, 1999; Shen, 2005; Anilowski et al., 2009; Anagnostopoulou and Tsekrekos, 2012, 2013). Furthermore, the evidence has been rather context-dependent and shows that opportunistic accruals earnings management is not a common practice among US targets in M&A. However, these studies do examine accruals manipulation as a sole earnings management technique, and ignore real-activities manipulation as an alternative option undertaken by targets simultaneously. As mentioned by Roychowdhury (2006) and Zang (2011), focusing on accruals earnings management exclusively may not fully explain targets' earnings management behaviour. Another strand of literature examining targets' overvaluation at the time of M&A (e.g., Huang and Walkling, 1987; Davidson and Cheng, 1997; Bauguess et al., 2009) has provided evidence on a relationship between accruals earnings management and M&A overvaluation (e.g., Rangan, 1998; Teoh et al., 1998b; DuCharme et al., 2004; Roychowdhury et al., 2012).

Real-activity earnings management is another possible way to manipulate reported earnings prior to M&A (e.g., Cohen and Zarowin, 2010; Gunny, 2010; Zang, 2011; Roychowdhury et al., 2012). Recent research shows that firms use multiple earnings management strategies based on accruals and real-activities (e.g., Graham et al., 2005; Roychowdhury, 2006; Cohen and Zarowin, 2010; Zang, 2011; Roychowdhury et al., 2012), and more importantly, managers prefer real-activities manipulation over accruals earnings management as a way to overstate reported earnings (Graham et al., 2005). The main rationale for managers' preference for real-activity techniques rather than accruals ones is that accruals manipulation is more likely to draw scrutiny from auditors and regulators, and potential litigation penalties than real-activities earnings management (e.g., Graham et al., 2005; Cohen and Zarowin, 2010; Zang, 2011; Roychowdhury et al., 2012). Real-activity earnings management is also easier to

camouflage as "normal" compared to accruals earnings management, and is therefore, harder to detect due to greater regulatory focus on accruals earnings management (Cohen et al., 2008). However it is likely to be more costly for investors (Cohen et al., 2008).

Relying on accruals manipulation to boost the stock price is too risky as real-activities cannot be undertaken at or after the end of the fiscal reporting period (Cohen and Zarowin, 2010). Therefore, managers are expected to engage in real-activity earnings management during the fiscal year (e.g., Zang, 2011). Given a greater relative opacity of real-activity manipulation, more recent empirical evidence suggests that at times of heightened scrutiny, such as M&A, earnings management via accruals is unlikely to be a dominant source of overvaluation (Cohen and Zarowin, 2010; Roychowdhury et al., 2012).

Despite the crucial importance of earnings management behaviour based on combined strategies in the M&A setting, there are only two US studies to date that examine real-activity earnings management in the context of M&A: Cohen and Zarowin (2010) and Roychowdhury et al. (2012). Unlike prior work, this chapter investigates UK targets' earnings management behaviour in the M&A context and whether the means of earnings manipulation, that is combined and simple strategies of earnings manipulation based on accruals and real-activities, affects the degree of their pre-announcement overvaluation. This study allows for the possibility that managers can use both strategies of earnings management simultaneously, and thus, the research design used in this research incorporates multiple possible scenarios of income-increasing earnings management.

To sum up, this thesis examines whether UK publicly listed targets' attempt to manipulate reported earnings prior to a deal via accruals and real-activities, and it also investigates the relationship between deal premium and the targets' accruals earnings

management behaviour. Furthermore, this thesis investigates the impact of the degree of targets' diversification on accruals earnings management, and explores the consequences of targets' earnings management on shareholders' wealth, based on combined vs. simple strategies via accruals and real-activities.

## 1.5 Research Questions

The main aim of this thesis is to address the following research questions:

1. It examines whether UK publicly listed targets engage in accruals earnings manipulation prior to a takeover.

2. It investigates whether the deal premium acts as a disincentive to manipulate reported earnings via accruals for UK targets prior to a takeover.

3. It examines whether targets' diversification has an impact on accruals earnings management prior to M&A transactions.

4. It investigates whether targets involved in M&A are more likely to use combined strategies of earnings management rather than simple strategies.[7]

5. It explores whether targets that undertake combined earnings management strategies exhibit a higher positive pre-announcement stock overvaluation than those with simple strategies.

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[7] Combined and simple strategies of earnings management are defined in Chapter 7.

## 1.6 Contributions of the Thesis

This thesis attempts to explore whether UK publicly listed targets engage in accruals and real-activity earnings management prior to M&A. By examining targets' earnings management behaviour, this study provides new evidence on earnings management by targets prior to a takeover in the UK context. Prior evidence on accruals earnings management by targets has been provided mostly by US studies (e.g., Easterwood, 1997; Eddey and Taylor, 1999; Erickson and Wang, 1999; Shen, 2005; Anilowski et al., 2009; Anagnostopoulou and Tsekrekos, 2012, 2013) and is not wholly convincing. Furthermore, the evidence reflects the conflicting circumstances of targets involved in M&A, in particular, the strong incentives to manipulate reported earnings and high costs due to enhanced scrutiny of the firm and its financial statements. Easterwood (1997) and Erickson and Wang (1999) find that the abnormal accruals for targets of hostile takeovers and stock-for-stock deals, respectively, are positive during pre-merger periods, but they are not always statistically significant. Eddey and Taylor (1999) provide little evidence that accruals earnings management is used to support target directors' recommendations on bids within Australia.

More recently, Anilowski et al. (2009) also find evidence of income-increasing earnings management in targets acquired via auction vs. negotiation. In contrast, Shen (2005) finds that soliciting targets make income-decreasing accruals choices to 'clean-up' their financial statements before a takeover in order to prove that they are credible targets. Consistent with Shen (2005), Anagnostopoulou and Tsekrekos (2012) examine US "seeking buyer" firms and find that these specific targets engage in income-decreasing accruals earnings management up to two years prior to the event and also in

the event year. In a cross-country study, Anagnostopoulou and Tsekrekos (2013) also find that the evidence of income-decreasing earnings management previously reported in the US is also confirmed for the UK and Italy, but not for other European countries. Furthermore, they document significantly positive abnormal returns for UK "seeking buyer" firms.

Given the mixed evidence provided by prior research on accruals earnings management by targets and the increased interest in real-activity earnings management as an alternative to accruals manipulation, this thesis adds to the extant literature by investigating earnings management behaviour in the M&A context. This study is extremely important for the following reasons. Firstly, this thesis provides new evidence that earnings management by UK targets is not a widespread practice in M&A. This analysis of targets with positive abnormal accruals also shows that deal premium and abnormal accruals for these firms are negatively related, and so acquirers pay less for companies where there are higher levels of earnings management. This suggests that there may be a strong disincentive for targets to manage earnings prior to mergers and acquisitions. Secondly, by investigating the relationship between earnings management and corporate diversification and using a panel data framework, this thesis provides new evidence in favour of the offsetting accruals hypothesis that accruals earnings management is less used in industrially diversified firms and a combination of industrial and geographical diversification alleviates earnings management. These findings are consistent with those reported in Jiraporn et al. (2008) and El Mehdi and Seboui (2011) for US firms.

Thirdly, unlike numerous previous studies focusing on accruals earnings management by targets in the M&A setting, this thesis investigates UK targets' earnings management behaviour in the M&A context based on combined and simple strategies. As accruals earnings management tests cannot fully capture firm earnings management

behaviour, this study allows for the possibility that managers can use both strategies of earnings management simultaneously, accruals and real-activity earnings management. In addition, this thesis is significant as, following Roychowdhury et al. (2012), it uses more refined regression models, based on a fixed effects panel data estimation approach, to measure real-activity earnings management.

The results of this thesis reveal that, if targets engage in income-increasing earnings management, they are more likely to use combined strategies of earnings management via both accruals and real-activities simultaneously rather than simple strategies based solely on either accruals or real-activities. The evidence also shows that managers' propensity to engage in combined strategies of earnings management prior to M&A is significantly higher than the propensity for accruals earnings management, despite the high and long-term costs of this earnings management method. These results are consistent with those reported by Roychowdhury et al. (2012) and Cohen and Zarowin (2010).

Finally, the short-term stock return tests performed in this thesis provide evidence that firms with positive earnings surprises, unusually low research and development expenditure and high accruals appear to be the most overvalued targets prior to M&A which is consistent with the results reported by Roychowdhury et al. (2012). The results of the stock return tests are statistically significant and also consistent with those reported for UK firms in prior literature (e.g., Croci and Petmezas, 2010). By analysing the abnormal stock return around the deal announcement date, this thesis also adds to the existing literature on market inefficiency with respect to accruals manipulation. The results of the last empirical study suggest that targets' shareholders obtain substantial gains from M&A in the form of positive abnormal returns which contradicts market efficiency.

## 1.7 Structure of the Thesis

This thesis consists of eight chapters. This first chapter presents a summary of the motivations to carry out this research on earnings management by UK targets in the M&A and the expected contribution to the extant literature. In addition, it discusses the significance of the thesis with regard to the consequences on targets' shareholders wealth in the M&A context and presents the research issues and the structure of the thesis.

Chapter 2 provides an overview of the M&A activity in the UK and examines the targets' benefits and costs of earnings manipulation. Starting with an in-depth analysis of the M&A environment during the period 1990-2008, the perspectives used to assess the success of a takeover and the measurement of shareholders' wealth effects are also discussed in this chapter, along with the empirical evidence on the relationship between deal characteristics and abnormal stock return. Furthermore, this chapter reviews the main hypotheses underlying the targets' earnings manipulation behaviour and the most important incentives for earnings management and its costs of detection. The empirical evidence on these significant earnings management determinants is also presented in this chapter.

Chapter 3 aims to present earnings management definitions and strategies and models used to estimate various proxies for earnings management. In particular, this chapter provides a review of the most relevant studies on accruals and real-activity manipulation. The differences between the two main methods of earnings management, combined and simple techniques of earnings management based on accruals and real activities, are discussed in terms of costs and benefits. Furthermore, this chapter reviews

the consequences of both accruals and real-activity earnings management on both operating performance and stock prices.

Chapter 4 provides an overview of the data used in the empirical chapters, the sources of information, the sample selection process and the descriptive statistics of key variables for the pooled UK targets sample. Furthermore, this chapter reviews the accruals and real-activity estimation methodology and describes the control sample.

Chapter 5 presents the first empirical study that examines whether UK publicly listed targets attempt to manipulate earnings in the M&A context. In addition, the relationship between deal premium and the targets' earnings management behaviour is investigated. The main hypothesis here predicts that if targets engage in accruals earnings management and this earnings manipulation is detected by acquirers, then acquirers should adjust down the deal premium paid for a target.

Chapter 6 provides the second empirical chapter. This study examines a potential cause of the lack of accruals earnings management by UK targets, in particular the complexity of their organisational structure. The objective of this chapter is to investigate whether corporate diversification mitigates or facilitates earnings management by UK targets in M&A. An explicit distinction between industrial and geographical diversification is made in this study.

Chapter 7, which is the third empirical chapter, examines the earnings management behaviour of UK targets based on combined vs. simple strategies of earnings management via accruals and real-activities. Specifically, this study allows for the possibility that managers can use both strategies of earnings management simultaneously, and thus, the research design used in this chapter incorporates multiple possible scenarios of income-increasing earnings management. A fixed effects panel data estimation approach is employed to estimate real-activity earnings management. In addition, this chapter examines the impact of earnings management in inducing stock

overvaluation at the time of a deal. Finally, Chapter 8 provides a summary of the results

and conclusions.

# Chapter 2  UK M&A Market and Takeover Regulation. Benefits and Costs of Earnings Management

## 2.1 Introduction

The previous chapter provides a summary of the thesis which examines earnings management by UK targets in M&A. This chapter presents an overview of M&A environment in the UK to provide a better understanding of the national and international economic, social and political circumstances in which local companies had operated during the period 1990-2008. This chapter also discusses the benefits and costs of earnings manipulation in the M&A context.

Prior literature shows that the UK had the highest level of takeover activity at about 21% of GDP, during the period 1998-2005 (Jackson and Miyajima, 2007). The first part of this chapter examines the UK M&A activity, its industry distribution and the consequences of industry shocks, as well as the contribution of cross-border activity to the overall M&A activity in the context of the European market. The perspectives used in the M&A literature to assess the success of a takeover and the empirical evidence on shareholders' wealth consequences of M&A transactions are also presented

in the first part of this chapter. Furthermore, the main deal characteristics are examined and this first part also discusses the impact of takeovers on shareholders' wealth.

The second part of this chapter reviews the main hypotheses underlying the firms' earnings manipulation behaviour and provides empirical evidence on the most important managerial benefits (such as capital market and non-capital market incentives) and costs of detection (such as audit costs, governance and controls, political costs, probability of detection, reversal of accruals, GAAP flexibility and other external factors-related costs, including due diligence-related constraints). Furthermore, this part focuses on the specific costs generated by the due diligence process and UK takeover regime.

The reminder of this chapter is organized as follows: Section two provides an overview of the M&A market in the UK, the measurement of the takeover success, the main deal characteristics and how the firm's shareholders' wealth is affected. Section three presents the main hypotheses underlying the targets' earnings manipulation behaviour and reviews the literature on earnings management benefits and costs, including the constraints imposed by the M&A due diligence and takeover regime in the UK. Finally, section four concludes the chapter and summarises its findings.

## 2.2 M&A Market in the UK

This section firstly overviews the UK M&A activity in the UK and its main drivers over the period 1990-2008. Then it presents the perspectives used in the M&A literature to assess the success of a takeover and the empirical evidence on the consequences of M&A transactions on shareholders' wealth consequences.

Furthermore, the main deal characteristics, such as the method of payment, the takeover strategy or the target's attitude towards the deal, the legal status of the target, the industry relatedness, and geographic scope, and the development of these deal characteristics in the UK will be presented along with the empirical evidence of their effect on shareholders' wealth.

## 2.2.1 An Overview of M&A Activity in the UK

The UK is the largest corporate control market in Europe and the second largest worldwide after the US. Prior literature shows that the UK had the highest level of takeover activity at about 21% of GDP, whereas US M&A activity totalled only 10.7% of GDP during the period 1998-2005 (Jackson and Miyajima, 2007). In Europe, half of the intra-European transactions occurred in the UK and almost a fifth of all the bidders in inter-European acquisitions were UK companies over the period 1993-2001 (Martynova and Renneboog, 2011). The dominance of the UK market continued after 2001, for example the reported number of transactions and value of M&A deals in the UK were the highest in Europe during the period 2006-2007, higher than the Netherlands, Italy, Germany and France (Sudarsanam, 2003).

The UK market shares many similarities with the US one in terms of the dynamics and the importance of the stock market as a source of corporate finance. In both economies acquisitions represent an important market-based mechanism for corporate governance. The analysis of the M&A activity in the UK focuses on the period 1990-2008 as this period is of high interest for each study presented within the three empirical chapters of this thesis.

There have been significant changes in the UK takeover activity since 1990 both in terms of the nature of takeovers and the institutional framework. Like the US, the UK market has experienced an increasing trend over the period 1990-2008 and takeovers had occurred in significant waves, as shown in Figure 2.1 and Figure 2.2. To ensure an accurate comparison with the US data, Figure 2.2 reports the value of deals in US$bn. During the period 1990-2008, two takeover waves are identified in the UK, a large one during 1993-2001, and a smaller one between 2004 and 2007.

In the first wave, which is labelled as the "fifth" takeover wave in prior M&A literature (e.g., Sudarsanam, 2003; Jackson and Miyajima, 2007; Martynova and Renneboog, 2011),[8] the number of transactions rose from 1,572 in 1993 to 3,255 in 1998 and 3,607 in 2000, before falling to 2,287 in 2002. It then rose in the second wave,[9] to 3,240 in 2007 before a sharp decline starting in 2008 when the financial crisis began. While the intensity of these two waves is greater in the US, they are similar as a trend. In terms of the value of M&A deals in the UK, a similar pattern showing the two takeover waves is exhibited by Figure 2.2. This pattern also mirrors the US pattern of M&A deals which is much higher in intensity than that experienced by UK companies.

Prior research also investigates the M&A activity in Europe and provides evidence that EU countries have experienced the same two waves during the period 1990-2008 (Sudarsanam, 2003). During the "fifth" takeover wave (1993-2001), the growing M&A activity in the UK can be explained in the European context as being mainly caused by the development of the single European market and the introduction of the Euro in the 1990s. Like in other European countries, UK companies sought to survive the tougher regional competition created by the new market and they took

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[8] The 1990s takeover wave, is considered the "fifth" and occurred in the US, Europe and to some extend in Asia, and followed the waves of the early 1900s, the 1920s, the 1960s and the 1980s (Martynova and Renneboog, 2008).

[9] The period between 2003 and 2007 is referred to as "the millennium boom" in the literature due to its unprecedented growth in equity markets (Sudarsanam, 2003).

advantage of the new opportunities for growth and market expansion, as well as new sources of financing. As a result of such economic and structural changes within the EU, the market for corporate control in Europe rose from US$ 0.15 trillion in 1988 to US$ 1.2 trillion in 1999, more than eight times the value of deals over a decade ago (Martynova and Renneboog, 2006).
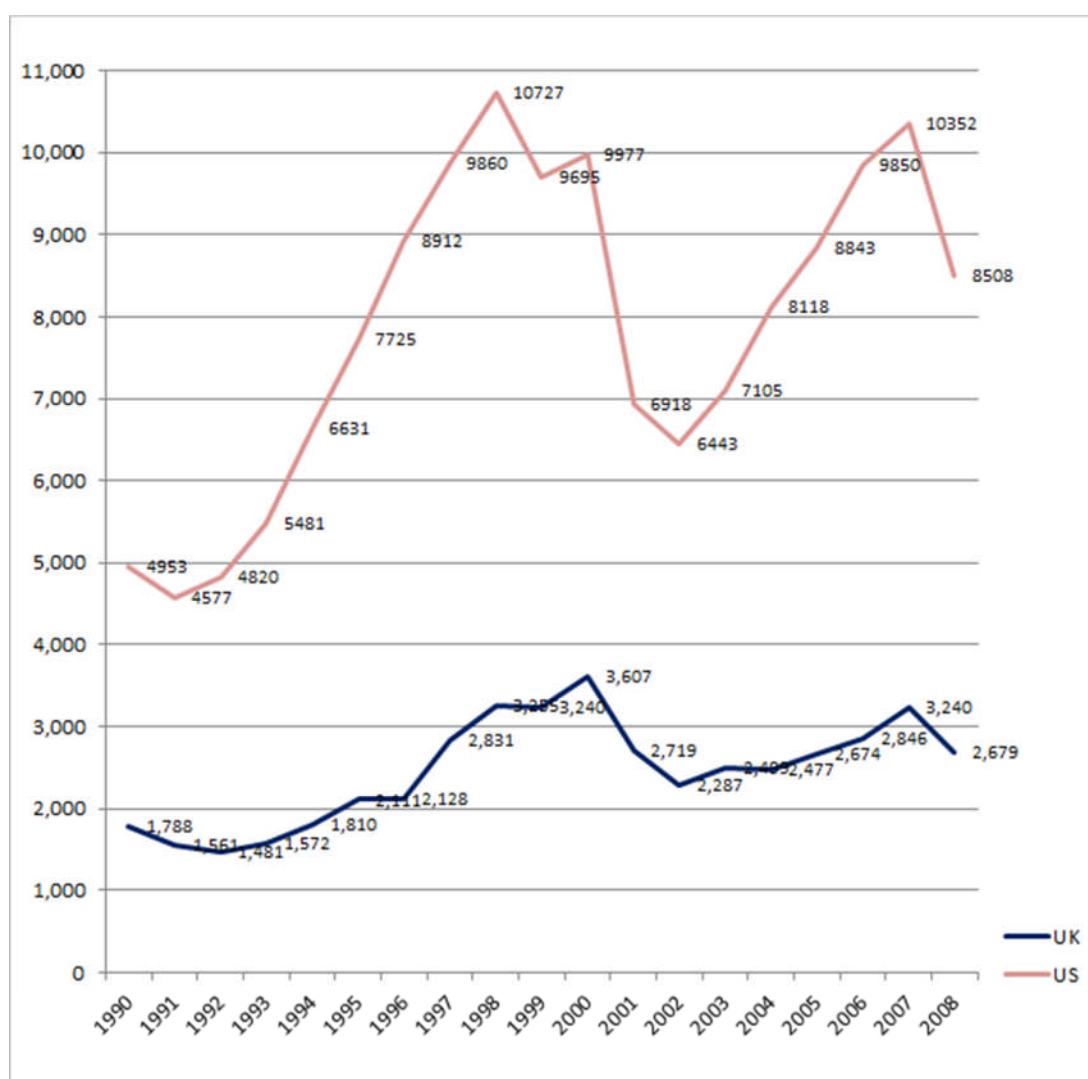


Source: Thomson Reuters and own calculations.

**Figure 2.1 Number of M&A Deals in the UK and US during the Period 1990-2008**

Another possible cause of the growing M&A activity in the UK is that many industry sectors were privatised, such as water, electricity and gas (Sudarsanam, 2003). Newly established industries, such as the Internet, only occurred in the 1990s in the UK (Powell and Yawson, 2005). Many firms also experienced divestitures in the 1990s. One such example is ICI which demerged in ICI and Zeneca, and which later merged with Astra to form AstraZeneca.
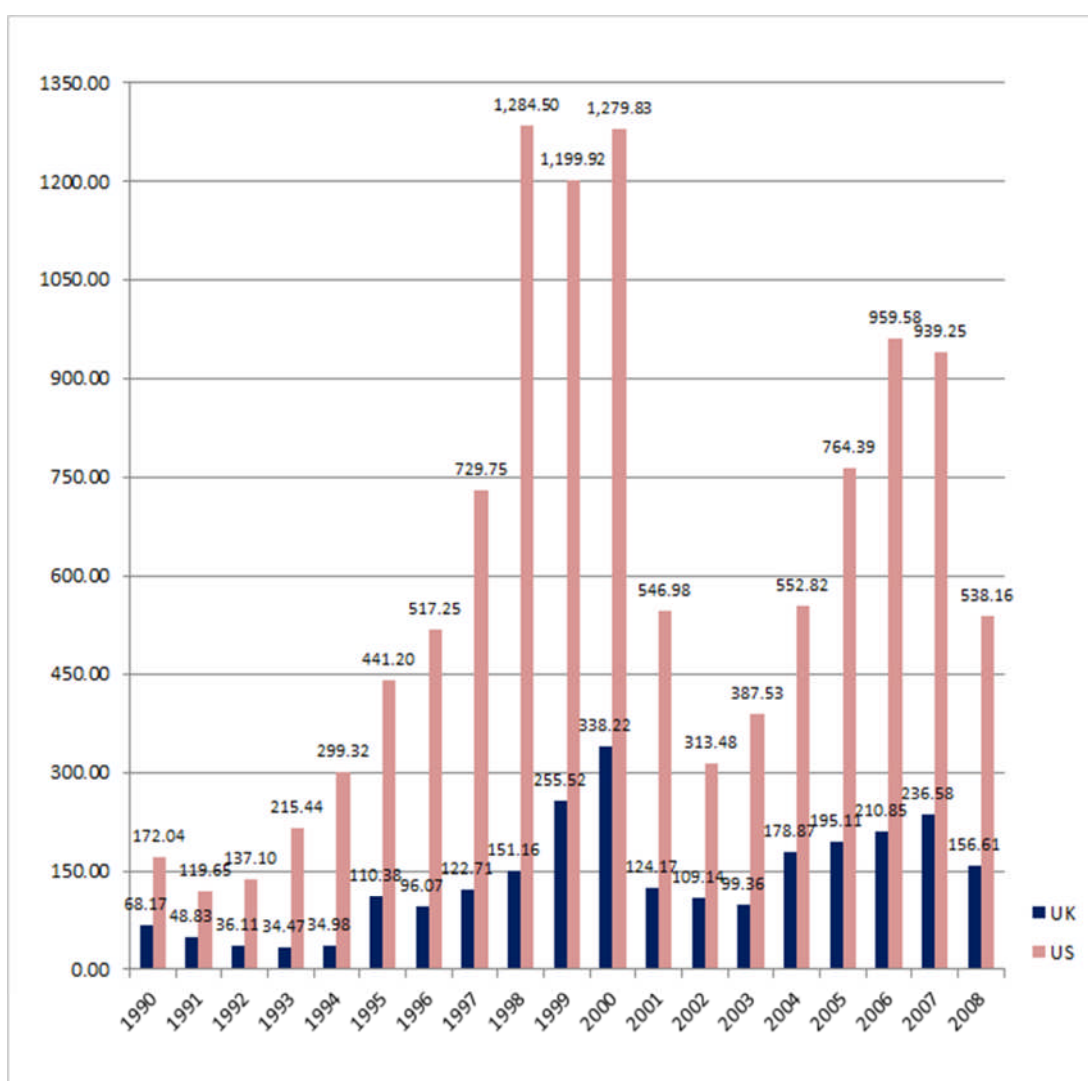
Source: Thomson Reuters, Datastream and own calculations. All values are adjusted for inflation.

**Figure 2.2 UK and US Value of M&A Deals during the Period 1990-2008 (US$bn)**

The breakdown of M&A activity per industry sector provides evidence that the takeover boom during the 1990s in the UK was due to industry shocks,[10] such as excess capacity, deregulation or technological innovation (Martynova and Renneboog, 2006; Jackson and Miyajima, 2007). For example, Jackson and Miyajima (2007) investigate the characteristics of M&A during the period 1991-2005 across five countries (in particular Japan, France, Germany, the UK and US) and find that in terms of the number of transactions, business services was the leading sector in all countries, specifically in the UK with a percentage of 14% out of all M&A transactions. Chemicals, industrial machinery, electronic equipment, food and communications were also dominant sectors in the UK. Furthermore, their results show that a great industry concentration of deal value was exhibited by high growth sectors, such as communications and chemicals, with a percentage of 63.2% in the UK, as well as consolidating sectors (undergoing consolidation or deregulation), [11] such as banking and electric and gas utilities.

Consistent with their results, Powell and Yawson (2005) show that the largest takeovers in terms of deal value occurred in Banking, Pharmaceutical and General Engineering, accounting for 19%, 18% and 5%, respectively. For divestitures, Banking, Telecommunications and Building Materials had the greatest proportion at 32%, 9% and 6%, respectively. Schoenberg and Reeves (1999) also find that high industry growth rates and low concentration ratios were associated with high takeover which suggests

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[10] Harford (2005) provides examples of industry shocks that influence M&A activity and are caused by: deregulation and privatisation (air transport, utilities, telecommunications), political events (shipping), changing consumer tastes (beverages and sweets), economic factors (healthcare) and Internet technology (banking, insurance and computers).

[11] Jackson and Miyajima (2007) classify sectors into three main groups based on their 2-digit SIC code: consolidating, mature and high growth industries. According to their definition, consolidating sectors represent sectors where the average annual number of listed firms between 1998-2005 versus 1991-1997 was zero or negative (for example, utilities, construction, mining, metals). Mature sectors refer to those sectors where the total number of listed firms expanded by up to 20 firms in total (such as food, real estate, tobacco). Finally, high growth sectors are those sectors with an increase of more than 20 firms (for example, business services, communications, electronics, brokerage; business services include a wide range of activities, such as advertising, consumer credit, personnel agencies, computer programming, security and many others).

that industry growth and concentration are important factors in determining the takeover activity in the UK.

Although there are several industry shocks that can affect takeover activity, deregulation seems to have been one of the most significant determinants of the takeovers and divestitures in the UK in the 1990s. Some industries, such as Electricity, Oil and Gas, Steel, Telecommunications, Transport and Water, were deregulated and privatised. In addition, other industries, such as Insurance and Air Transport have been affected by the EU deregulation. For example, Schoenberg and Reeves (1999) find strong evidence of deregulation, industry concentration and industry growth as crucial factors in determining takeover activity in the UK at the industry level over the period 1991-1995. In the same line of research, Sudarsanam (2003) also examines the dynamics and pattern of takeover activity per industry in the UK during the period 1988-2006 and finds evidence of industry clustering,[12] which suggests that economy-wide takeover waves are also driven by industry shocks, not just the economy or regional-wide factors.

Unlike prior research in the US (e.g., Mulherin and Boone, 2000; Andrade et al., 2001) and UK (e.g., Schoenberg and Reeves, 1999), Powell and Yawson (2005) analyse takeover and divestiture activity in the UK during the period 1986-2000 and argue that deregulation and technological innovation in the UK do not seem to have had a significant impact on takeovers. A possible explanation for their lack of evidence in favour of deregulation during the study period is related to the use of UK government's "golden share" in certain industries. For example, the Electricity industry was deregulated in 1989, but takeovers were only possible after five years (specifically from

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[12] As noted by Sudarsanam (2003), industry-clustering refers to copycat or "follow me leader" moves taken by competitors operating in the same industry to restore the equilibrium disturbed by the leader's move, the first-mover firms may become winners and the followers may end up as losers; however, the followers can learn from the first-mover mistakes.

1995 onwards) when the government's "golden share" validity expired. In addition, they also find that broad shocks increase (decrease) the likelihood of takeovers (divestitures).

In the UK, foreign competition has also been found to have significantly affected takeover activity in the 1990s and 2000s (Powell and Yawson, 2005). This factor has been a major problem for certain industries, such as Automobiles, Aerospace and Defence, Construction and Electronics. For example, the UK Automobile industry was greatly hit by foreign competition which led to a lower profitability in the industry. A well-known case of takeover in this industry is the acquisition of Jaguar (UK) by Ford (US). With regard to the impact of foreign competition on takeover activity in the UK, Powell and Yawson (2005) argue that, along with other industry shocks, such as low growth and better industry stock market performance, the threat of foreign competition increased takeover activity in the UK.

Cross-border transactions are another crucial driver of the growth in M&A activity in the UK. In their cross-country study, Jackson and Miyajima (2007) observe that in the UK the cross-border activity, which represented about 40-50% of deals, was higher than that in the US during the period 1991-2005, which accounted for 20-25%. They also investigate the contribution of cross-border activity to the growth of M&A in Europe and the USA, and observe that the UK exhibited the highest contribution of cross-border deals to growth in M&A value, of 73%. This suggests that the UK market is the most internationally open market worldwide (Jackson and Miyajima, 2007). These findings also point to the importance of the common EU market and opening of new M&A markets in Eastern Europe.

Martynova and Renneboog (2006) also provide evidence that UK firms were among the most active participants (by country of acquirers and targets) in the intra-European cross-border market during the period 1993-2001. In addition, their results show that the UK and France were the biggest net acquirers in intra-European

acquisitions. Like in another European countries, the growth of the intra-European takeover market in the UK was mainly caused by various industry shocks, such as deregulation and privatisation in the banking sector and utilities and the increasing R&D expenditure in high-technology industries, such as biochemistry and pharmaceuticals (Martynova and Renneboog, 2006). In addition, international business expansion was another important goal of UK firms participating in intra-European transactions.

The major changes in the nature of the UK takeovers have occurred at the same time as major changes in regulatory framework. These changes affecting corporate governance and takeover regulation have been the result of the dissatisfaction with the effectiveness of the traditional corporate governance system at the time of the Cadbury Report in 1992 and have also been concerned with the takeover process itself.

Early studies up to and including the 1980s on announcement returns in the UK had provided convincing empirical evidence of insignificant or negative returns to acquirers' shareholders and positive gains to the targets' shareholders (e.g., Cosh et al., 1989; Dickerson et al., 1997), which supported the view that the market for corporate control as a corporate governance mechanism to discipline management was highly imperfect and takeovers were not generating performance gains to shareholders (Cosh et al., 2008). The concerns about the apparent failure of the market for corporate control were reinforced by a series of corporate collapses and scandals in the 1980s and 1990s in the UK, such as the BCCI bank and the Robert Maxwell pension funds.

The main concerns were about the effectiveness of board of directors and the transparency of company reports. Consequently, the Cadbury Committee was set up in 1991 and its recommendations led to a Code of Best Practice based on the "comply or explain" principle which established high standards of corporate governance behaviour. The London Stock Exchange required all publicly listed companies to state whether

they were complying with the Code and to provide reasons for any areas of non-compliance. The Code was concerned with the effective operation of board of directors, the separation of the roles of chief executives and Chairman, the role of non-executives, board committees and the audit process (Cosh et al., 2008).

The governing principles of the Code of Best Practice have been refined later by the Greenbury Committee, established in 1995, who prepared the Greenbury Report in 1995 which addressed concerns about top executive remuneration. The Hampel Committee (1997) reviewed the findings and outcomes from the Cadbury and the Greenbury Report and the result was the Combined Code on Corporate Governance published in 1998. Following the Enron and WorldCom scandals, the Combined Code was updated based on the recommendations of the Higgs Report in 2003. More importantly, the Hampel Report (1998) represented a significant development of the corporate governance policy in the UK as it shifted away from a great emphasis on accountability and control aspects of governance and stressed the importance of business prosperity and enterprise (Keasey et al., 2005).

The UK soft regulation has brought significant changes in corporate governance practice. In their study, Cosh et al. (2008) analyse the impact of UK changing regulation in the 1990s and 2000s on corporate governance structures with regard to the size, composition and the role of board of directors, the role of institutional shareholders and the remuneration and appointment of executives. Specifically, they argue that the proportion of non-executive directors on the board of the largest companies increased over the period 1980-2006[13] and the average board size also declined for the largest companies, which is consistent with the view that smaller boards are more effective.

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[13] However, in terms of their independence, Cosh et al. (2008) highlight the inter-locking directorship issue, more than half of the non-executives were current or former executive directors of the company or other similar ones.

Furthermore, the proportion of firms combining the roles of the Chief Executive Officer and Chairman also fell and as a result of the Combined Code recommendations, the companies have improved their remuneration disclosure practice in the 2000s. Most large companies provide annual reports containing detailed data on executive remuneration. However, the corporate governance reforms have not resulted in lower levels of executive pay on average, rather it rose significantly and this rise had been accompanied by the inclusion of other remuneration elements, such as stock options and long-term incentives (Cosh et al., 2008).

The rising dominance of institutional shareholders holding major shareholdings of UK listed companies during the period 1960-2000 has been another significant consequence of the corporate governance reforms in the UK. Moreover, the overseas holdings of these companies by financial institutions, such as private equity institutions, have risen dramatically from 1981 to 2006 (Cosh et al., 2008).

At the same time that these changes to the corporate governance regulation took place, there had been the development of the City Code to regulate the takeover process itself. Takeover regulation is considered to be an element of corporate governance, thus, changes in takeover regulation affect the level of investor protection, ownership and control, the development in the capital markets and the market for corporate control (Goergen et al., 2005). Takeover regulation does not only mitigate potential conflicts of interests related to the transfer of control, but has also significant consequences with regards to agency problems between management and shareholders, minority and majority shareholders and other stakeholders.

The UK City Code on Takeovers and Mergers (the Takeover Code), which is the oldest takeover regulatory regime, was introduced in 1968 and has since been frequently amended. The Takeover Code is enforced by the City Panel on Takeovers

and Mergers (the Takeover Panel) and has been designed to protect shareholders interests and preserve an active market for corporate control (Cosh et al., 2008).

Similar to the Combined Code, the Takeover Code does not operate with the force of law and, more importantly, both The Combined Code and Takeover Code have close and strong links with the stock market listing requirements, dominating the practice of behaviour with regard to the areas of corporate governance and operation of market for corporate control. The focus is on shareholders alone and the main principle is the equal treatment of stockholders. Takeovers for public companies are under the Takeover Code, however deals for private companies are regulated by the provisions of the UK Companies Act 2006.[14]

The Takeover Panel is a self-regulatory system, and is both a rule-making and a rule-enforcing body, which includes representatives of investment institutions, their trade associations, banks, the accounting profession and industry (Sudarsanam, 2003). Furthermore, the Takeover Panel can resolve bidding disputes and regulatory issues quickly and with minimum uncertainty. Therefore, takeover litigation is almost non-existent in the UK (Armour and Skeel, 2006). The main principles and rules of the Takeover Code are discussed in depth later within this chapter.

The Takeover Panel's enforcement powers have increased as a result of the implementation of the European Union's Takeover Directive in 2004, which is mainly based on the British model of takeover regulation. The European Commission has attempted to harmonise takeover regulation at the European level to ensure an efficient market for corporate control. Thus the first draft of the Takeover Directive was presented in 2002. The directive focused on the introduction of five provisions regarding: 1) a mandatory-bid rule, 2) the principle of equal treatment of shareholders, 3)

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[14] The Code also applies to private companies that meet certain criteria, for example they have been listed on the London Stock Exchange in the previous 10 years (Sudarsanam, 2003).

a squeeze-out rule and sell-out rule, 4) the principle of board neutrality, and 5) a break-through rule.[15] As a result of the break-through rule, considered to be the most radical of the provisions (Sudarsanam, 2003), the EU directive faced strong opposition from EU countries and was not approved. Prior research has provided evidence of increasing convergence towards the Anglo-Saxon system in Europe,[16] and the equal-treatment requirement has been adopted by European countries as a fundamental principle of corporate law. There is also gradual adoption of the mandatory-bid and squeeze-out rules (Goergen et al., 2005). However the takeover regulatory changes recommended by the EU directive have different effects within their national corporate governance systems (Goergen et al., 2005).

## 2.2.2 Perspectives and Measurement of Takeover Success

The success of a takeover is assessed using a variety of perspectives deriving from stakeholders at the firm level, as well as the two parties involved in the deal (bidder and target). M&A transactions are of high interest to all stakeholders in both parties involved, such as shareholders, managers, employees, consumers and the wider community. The perspective derived from acquirer and target used to assess the takeover success will be discussed in detail later within this chapter when the evidence on the effects of takeovers on shareholders' wealth is presented.

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[15] As defined by Goergen et al. (2005), the break-through rule enables a bidder who has accumulated a given fraction of the equity to break through the company's voting arrangement and exercise control as if the one-share-one-vote principle were upheld.

[16] Many European countries have adopted some of the principles and rules of the UK Takeover Code, but most of the countries that have introduced them, such as Austria, Belgium, Finland, France, Italy and Spain, have opted for a statutory system (Sudarsanam, 2003).

Given the stakeholders' interests, the assessment of the success of any takeover heavily depends on the adopted stakeholder perspective and the success criteria used for assessment (Sudarsanam, 2003). There are four main perspectives in the M&A literature when the performance of the corporate control market is discussed: the economic and strategy perspective, the finance theory perspective, the organizational perspective and the managerial perspective (Sudarsanam, 2003).

The economic and strategy perspective suggests that M&A deals are driven by firms seeking to establish competitive advantage, which often involves economies of scale, market power and other "synergies", leading to value creation for shareholders. A more recent strand of literature places takeovers in the context of industrial organisation and attempts to answer the question "who buys who" up and down the supply chain and within industry networks (e.g., Eckbo, 2013).

The finance theory perspective suggests that maximisation of shareholders' wealth is the primary objective of the acquisition decisions, however, poor corporate governance and agency problems can cause deviation from this objective. When the agency costs caused by serious conflicts of interests between shareholders and managers become high, the threat of takeovers can reduce them by removing the incompetent management. A large part of the M&A literature based on the agency and optimal contracting theory examines the role of corporate governance in protecting shareholders' interests, and how and whether market discipline promotes economic efficiency (e.g., Jensen and Ruback, 1983; Jensen, 1993; Shleifer and Vishny, 1997; Becht et al., 2003).

The organizational perspective questions the assumption that takeover decisions rely on considerations of rationality and shareholders' value creation and the outcome of any takeover is influenced by organizational change issues. Finally, the managerial

perspective is based upon the agency costs theory and points to managerial objectives which may not coincide with shareholders' objectives (Sudarsanam, 2003).

This thesis focuses on the shareholders' value or stock market performance as the finance literature often evaluates the takeover success from the perspective of shareholders and adopts the abnormal shareholder return to acquirers and targets as proxy for the effects of takeovers on shareholders' wealth. This is considered a valid criterion for takeover success evaluation because shareholders are residual owners of the company (e.g., Becht et al., 2003; Martynova and Renneboog, 2011). In addition, the UK governance system and takeover regulation are mainly driven by shareholder value. Therefore, following the finance literature, the last empirical chapter of this thesis analyses the economic impact of accruals and real-activity earnings management on the targets' shareholders' wealth by examining the stock price performance (abnormal shareholder return) around deal announcements.

The dominant approach used in the M&A literature to measure takeover success is an event study analysing share price changes around the deal announcement. The assumption is that an M&A announcement brings important information about the acquirer and target, along with the deal offer, to the market. Consequently, investors can update their estimates of both firms' earnings, assess the deal "synergies", and incorporate this new information into the share price.[17] The incremental change in the share price of the acquirer and target around the deal announcement day is considered to be the net present value of the takeover and is measured by the abnormal stock return (e.g., Alexandridis et al., 2010; Martynova and Renneboog, 2011). According to this approach, the shareholders gain from M&A if the value of their shares has

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[17] This approach of assessing takeover success by analysing the abnormal stock return around deal announcement day leads to reliable results only if the capital market efficiency assumption holds: for example, individual investors act rationally in the capital market, markets reveal information efficiently and prices incorporate all available information instantaneously.

increased as a result of the takeover. Specifically, it means that the shareholders' gains from takeovers are high enough to compensate them from the risk they bear in investing in acquirer's company post takeover (Sudarsanam, 2003).

Another way of assessing the takeover success in the M&A literature is from the perspective of the parties themselves, specifically the acquirer and the target. Conceptually, this approach focuses on shareholders' value: the only difference is that it distinguishes between the wealth effects to acquirer's and target's shareholders. Some studies also report the combined abnormal returns to the pair of a bidder and its target or synergy gain. Croci and Petmezas (2010) define synergy gain as the cumulative abnormal return of the combined firm, which is a portfolio composed of the bidder and target weighted by their size around the deal announcement.

The takeover wealth effects from this perspective have often been empirically assessed in the literature. The key conclusion of most of the literature on market reaction to takeovers which are mainly concentrated in the UK and US, is that takeovers create value for the acquirer and target shareholders combined, with the majority of gains accruing to the target shareholders (Faccio et al., 2006; Alexandridis et al., 2010; Martynova and Renneboog, 2011). For example in the UK Sudarsanam et al. (1996) and Croci and Petmezas (2010) find that the average announcement cumulative abnormal return (CAR) to targets' shareholders is 29% and 21%-28% during the period 1980-1990 and 1996-2005, respectively. Alexandridis et al. (2010) cover jointly US, UK and Canada (the most competitive acquisition markets in the world) and document that targets from these countries have, on average, a CAR of 28%. Bhagat et al. (2005) find even higher gains for targets in US tender offers during 1962-2001, that is an average

CAR of 30.01%. Overall, these studies show that shareholders of targets receive large premiums relative to the deal announcement date, on average 10%-30%.[18]

Regarding the combined abnormal returns to the pair of a bidder and its target, prior literature documents significant positive wealth effects, however the size of the total announcement effect varies across studies. While Andrade et al. (2001) and Bhagat et al. (2005) report an average synergy gain of 1.8% in the US during the period 1973-1998 and 1962-2001, respectively, Croci and Petmezas (2010) find an average synergy gain of 4%-5% in the US during the period and 1996-2005. Similarly to their US counterparts, UK combined firms (acquirers and targets) gain average announcement returns of 2% (Sudarsanam et al., 1996).

In contrast, acquirers experience either normal returns or significant losses around the deal announcement. Thus, some papers report positive abnormal returns to acquirers' shareholders (e.g., Schwert, 1996; Goergen and Renneboog, 2004; Moeller et al., 2005), others document negative abnormal returns (Sudarsanam et al., 1996; Mulherin and Boone, 2000; Andrade et al., 2001) in the US and UK. Regardless of the sign, acquirers' abnormal returns are small ranging between -5% to +5%.[19]

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[18] However, Schwert (1996) claims that the share price reaction of target shareholders is not limited to the transaction announcement date effect, but it occurs prior to the initial announcement in the form of the pre-bid run-up which is substantial and often exceeds the deal announcement effect itself. Consistent with this hypothesis, some papers find evidence of a price run-up between 13% and 22% (Goergen and Renneboog, 2004), which suggests that takeovers are anticipated and the price run-up effect can result from insider trading, rumours or deal-specific information leakage (Martynova and Renneboog, 2006).

[19] Prior literature finds that targets and acquirers' abnormal returns vary systematically with deal characteristics, such as method of payment, deal strategy, legal status of the target, industry-relatedness and geographical scope. These characteristics and their takeover wealth effects will be discussed later in this chapter.

## 2.2.3 Deal Characteristics and Shareholders' Wealth Effects

The following main deal characteristics have a significant impact on the acquirer and target stock return: the method of payment (all-cash, all-equity and mixed offer), the takeover strategy or the target's attitude towards the deal (hostile versus friendly takeovers), the legal status of the target (public versus private targets), the industry relatedness of the acquirer and target (diversifying versus non-diversifying deals), and the geographic scope (domestic versus cross-border takeovers). All these deal characteristics, their historical pattern in the UK and the empirical evidence of their effects on shareholders' stock return will be discussed next.

### A. Alternative Methods of Paying for Takeovers

Among the most important M&A decisions an acquirer has to make is to determine the medium of exchange of its offer. Specifically, the acquirer must choose whether the payment will be in the form of cash, equity, debt, "earnout"[20] or a combination. The main distinction between cash and stock (equity-financed) deals is that in cash transactions acquirers take on the entire risk associated with the deal's expected synergy, and in stock deals, the risk and synergy value is shared with the targets' shareholders (Rappaport and Sirower, 1998). In addition, the value of the shares used as the medium of exchange in deals depends on the profitability of the takeover, while the value of cash does not (Fishman, 1989).

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[20] As noted by Faccio and Masulis (2005), "earnout" is an amount which is expected to be paid over time (generally in cash) if the target meets certain financial performance criteria.

Prior M&A literature documents that, unlike the 1980s, the "fifth" takeover wave (1993-2001) exhibits a major shift from cash towards equity and debt in the financial composition of takeovers in Europe (Martynova and Renneboog, 2006). Specifically in the UK, Sudarsanam (2003) finds that the proportion of the number of pure equity increased during the 1990s and slightly dominated the cash transactions. The combination of equity, cash and debt became the most popular method of payment during 1995-1999 before the crash in 2000.[21] More interestingly, they document a significant increase in the use of cash which dominated pure share and mixed deals during the millennium boom (2003-2007) which can be explained by greater liquidity in credit markets and more powerful role played by private equity acquirers in Europe (e.g., Sudarsanam, 2003; Martynova and Renneboog, 2006). A similar pattern, but with a higher intensity, is reported for the US during the period 1990-2007 (Sudarsanam, 2003; Jackson and Miyajima, 2007).

A large body of M&A literature examines the choice of payment method and shows that the means of payment affects the short-term wealth effect of a takeover. Cash deals generate higher stock returns to the acquirer and target shareholders than stock transactions, and on average are negative in pure share deals for public targets (e.g., Andrade et al., 2001; Moeller et al., 2004).[22] A number of theories have been provided to explain the choice of payment method, such as information asymmetry, tax effects, agency and corporate control motives and behavioural arguments.

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[21] The tendency of UK firms to use less pure cash and more a combination of equity, cash and debt perhaps reflects the consequences of requirements of the UK Takeover Code to include cash components under the mandatory bid rule. Specifically, in mandatory bids, the acquirer has to make a pure cash offer or to attach a cash alternative to a mixed offer. Therefore, the choice of method of payment does not entirely depend on an acquirer's strategic consideration, but it is a result of its deal strategy, need for risk mitigation and the constraints from the regulatory regime (Sudarsanam and Sorwar, 2010).

[22] However some prior studies distinguish between public and privately held targets and find that acquirers announcement returns are negative when the target is a public company and non-negative or even positive in all share deals for private companies (e.g., Martin, 1996; Capron and Shen, 2007).

Most studies provide evidence in favour of the information asymmetry hypothesis (e.g., Myers and Majluf, 1984; Hansen, 1987; Fishman, 1989), which states that when the acquirer and target are asymmetrically informed about the value of their shares, a stock offer is considered by investors as a signal that the acquirer's shares are overpriced and therefore adjust their share price downward (e.g., Moeller et al., 2004; Faccio et al., 2006; Martynova and Renneboog, 2006). A related hypothesis, the overvaluation hypothesis formalised by Shleifer and Vishny (2003), is that overvalued acquirers purchase undervalued (or less overvalued) targets when the market is overvalued. Even though the overvaluation hypothesis has been extensively discussed because merger waves are correlated with high stock market valuation, there is little systematic evidence consistent with this hypothesis.

## B. Takeover Strategy

Another deal characteristic that significantly affects the outcome of a takeover is deal strategy. Prior M&A studies find that the most hostile deals were in the US and UK during the 1990s, compared to other developed countries, such as France, Germany and Japan (Jackson and Miyajima, 2007). However, in Europe the number of hostile transactions which were opposed by the political and financial establishment in the 1980s, sharply declined during the 1990s wave (Martynova and Renneboog, 2006).[23] In addition, Jackson and Miyajima (2007) examine the use of defensive strategies during hostile deals in the UK and claim that the overall number of defensive tactics was only

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[23] A friendly deal is defined as a transaction recommended by the target's management, while a hostile or contested bid represents a deal a recommendation has not been made and the target's management engages in various defensive tactics (Sudarsanam, 1995; Schwert, 2000; Sudarsanam and Mahate, 2006).

37 (compared to 133 in the US) and the most popular defensive strategies involved were white knights, self-tender or scorched earth tactics.[24]

Target's management's resistance to takeovers has been interpreted in the literature using two opposing theories: the manager-shareholder alignment hypothesis and the management entrenchment hypothesis (Sudarsanam, 1995). The manager-shareholder alignment hypothesis predicts that managers act in the shareholders' interest and perform a coordinating role during the takeover process. In contrast, under the management entrenchment hypothesis, the defence strategy employed by targets' managers may serve their self-interests.

Furthermore, Morck et al. (1988) argue that the motive of takeovers determines its strategy, friendly vs. hostile deals; specifically friendly transactions are driven by a synergy rationale, whereas hostile takeovers are driven by the replacement of underperforming target's managers. This explanation is simplistic since in the M&A literature hostile deals are often associated with superior shareholders' wealth performance compared to friendly ones (e.g., Goergen and Renneboog, 2004; Sudarsanam and Mahate, 2006; Martynova and Renneboog, 2011). However, the evidence is inconclusive. For example, for a sample of 519 UK M&A during 1983-1995, Sudarsanam and Mahate (2006) show that hostile acquirers deliver higher shareholders' value than friendly acquirers, the average abnormal return for hostile and friendly deals are both negative, but less negative for hostile than friendly transactions. For targets, Kini et al. (2004) document an average of 40% abnormal announcement return for

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[24] In the UK, most takeover offers for public companies are made directly to target shareholders, but the acquirer seeks to obtain an initial approval from the target's shareholders. The nature, intensity and the choice of defensive strategies implemented by target's management is significantly influenced by the Takeover Code (Sudarsanam, 1995), which stresses the shareholder rights aspect of takeovers through mandatory bid rule and "board neutrality". Thus, poison pills and proxy flights, which are the most common used in the US (Jackson and Miyajima, 2007), are nearly impossible to use under the UK Takeover regulatory regime. However, the UK Takeover regulatory regime is not antagonistic to hostile takeovers (Sudarsanam and Mahate, 2006), target's managers are severely constrained from undertaking frustrating action without the approval of its shareholders.

hostile targets compared to 33% for friendly deal targets (1979-1988). This is similar to the evidence from Goergen and Renneboog (2004) for European targets (1993-2000).

### C. Public vs. Private Targets

Privately held companies represent a large proportion of the total number of takeovers in the UK; specifically it accounted 80% during 1981-2001 (Draper and Paudyal, 2006) and nearly half of the domestic targets (49.3%) during 1991-2005 (Jackson and Miyajima, 2007). Only a small proportion of domestic targets (9.5%) in the UK acquired during the 1990s were publicly listed companies (Jackson and Miyajima, 2007).[25]

Despite the frequency of takeovers of privately held targets, studies of these takeovers and their shareholders' wealth effects are quite rare. The theoretical literature and empirical evidence suggest that acquirers of privately held targets gain from takeovers and acquirers of public targets suffer a loss (e.g., Chang, 1998; Fuller et al., 2002; Moeller et al., 2004; Draper and Paudyal, 2006; Faccio et al., 2006; Martynova and Renneboog, 2011). For example, Faccio et al. (2006) examine European acquirers and document a negative abnormal return of -0.38% for acquirers of listed targets and a positive abnormal return of 1.48% for acquirers of private targets.

In particular for the UK, Faccio et al. (2006) re-run their tests and also find that the average abnormal return for acquirers of private targets (1.33%) is greater than that for acquirers of public targets (-1.12%). The abnormal returns for US private and public acquirers are similar to those from the UK and Europe (e.g., Chang, 1998; Fuller et al.,

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[25] Despite the high proportion of M&A involving private targets in Europe, the frequency of deals of public targets substantially increases in the second half of the "fifth" wave (1997-2001), reaching its pick in 1999 when the M&A activity was at its strongest (Martynova and Renneboog, 2011).

2002). The existing empirical evidence can support the agency costs and tax effects, liquidity and bargaining power blockholders formation hypotheses as possible explanations of the listing effect in the acquirers' return. However, these listing effects are found to be dependent on the method of payment (e.g., Moeller et al., 2004; Draper and Paudyal, 2006; Faccio et al., 2006).

### D. Domestic versus Cross-border Takeovers

Cross-border deals are another important potential driver of the growth in M&A in the UK. The cross-border takeovers activity increased substantially worldwide during the period 1990-2007 compared to earlier periods. For example, in 2006, the cross-border takeovers accounted for 36% of all deals for all member countries of the EU, and domestic deals represented 64% (Sudarsanam, 2003). In particular, the UK became one of the most active countries in cross-border deals in terms of both acquirers and targets (e.g., Sudarsanam, 2003; Martynova and Renneboog, 2006; Jackson and Miyajima, 2007).

The increasing trend of cross-border deals in the European context, as in the UK, was due to the higher importance of the single European market, the opening of new Eastern European markets and the introduction of the Euro in the 1990s, as well as globalisation of product and service goods markets, privatisation of state companies and the explosion of technology.[26] The main rationale for foreign investment (cross-border transactions) derives from the ownership-location-internalisation paradigm, as well as capital market imperfections and tax effects, which have been well-debated in

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[26] In the early 1990s, the state-owned electricity, water supply and gas companies were deregulated and privatised by the UK government. After deregulation and privatisation, they became targets of foreign acquirers in cross-border transactions. For example, power companies from Germany, France and US were the most active acquirers of British electricity companies, which later had undertaken much of the extensive restructuring of these sectors (Sudarsanam, 2003).

economics literature (e.g., Danbolt, 2004; Gregory and McCorriston, 2005; Moeller and Schlingemann, 2005).

Prior studies have also examined the shareholders' wealth effects of cross-border deals, focusing mostly on short-term stock performance surrounding the takeover announcements (e.g., Goergen and Renneboog, 2004; Gregory and McCorriston, 2005; Moeller and Schlingemann, 2005). However the evidence is quite mixed. While Moeller and Schlingemann (2005), Goergen and Renneboog (2004) and Martynova and Renneboog (2011) report positive short-term abnormal returns for US and European acquirers in cross-border transactions, Gregory and McCorriston (2005) and Aw and Chatterjee (2004) find wealth losses for UK acquirers, but insignificantly different than zero. In addition, prior empirical studies also show that certain contextual factors, such as target firm location, shareholder rights protection, corporate governance and legal regimes in acquirers' and targets' countries, can influence the wealth gains to acquirers (e.g., Aw and Chatterjee, 2004; Rossi and Volpin, 2004; Gregory and McCorriston, 2005).

### E.  Diversifying versus Non-diversifying Deals

Despite the fact that some researchers and popular press highlighted a "return to core" or an increasing trend towards refocusing, diversifying takeovers remained a popular expansion strategy for UK companies in the 1990s. Most of the diversification through acquisitions took the form of related diversification, but a substantial part was unrelated (Sudarsanam, 2003). Martynova and Renneboog (2006) document that, on average, 36% of European takeovers (including UK deals) were unrelated and 64%

represented related deals during 1993-2001.[27] Specifically in the UK, Jackson and Miyajima (2007) find that 40% of the diversifying deals were due to diversification within the same two-digit SIC industry and another 16% were transactions in industries related at a broad SIC division (one-digit SIC industry) during 1990-2005, which suggests that most of the "fifth" merger wave was due to growth in companies in the same and related industries (Martynova and Renneboog, 2006).

Many studies have investigated the effect of diversification on firm value, however the evidence is mixed. Earlier research documents a value discount associated with diversification and argues that their empirical evidence is consistent with the agency costs hypothesis which predicts that diversification results from the pursuit of managerial self-interest at the expense of stockholders (e.g., Lang and Stulz, 1994; Berger and Ofek, 1995; Denis et al., 1997, 2012). Berger and Ofek (1995) show that US diversified companies trade at discounts of about 15% and Lang and Stulz (1994) argue that diversified companies tend to have a lower firm value measured by Tobin's Q than comparable portfolios of stand-alone firms. Moreover, Comment and Jarrell (1995) claim that during the 1980s diversified firms failed to take advantage of the benefits of diversification, such as economies of scale in production and marketing, financial synergies (generated by internal capital markets) and a greater use of debt. In addition, Berger and Ofek (1995) and Comment and Jarrell (1995) document a trend towards increased corporate specialisation in the 1980s.

More recent research identifies advantages associated with efficient internal markets compared to external capital markets, and claim that diversification can create value (e.g., Hubbard and Palia, 1999; Aggarwal and Zhao, 2009). For example, Aggarwal

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[27] Corporate diversification is generally measured in terms of the number of industries a company operates in, the larger the number, the more diversified the company is (Sudarsanam, 2003). Many researchers have used the SIC industry classification to identify single-segment and diversified companies. In Martynova and Renneboog (2006), corporate diversification is defined based on the two-digit SIC code.

and Zhao (2009) report that while in emergent industries (where companies face relatively high external market transaction costs) diversified companies perform better than single-segment companies. In contrast, diversified companies operating in mature industries (where companies face relatively high internal capital market and low external capital market transaction costs) perform worse than single-segment firms, which is consistent with the transaction cost theory. Finally, a few recent studies question the diversification discount itself and claim that the discount is due to measurement errors, selection bias or use of invalid benchmarks (e.g., Graham et al., 2002; Villalonga, 2004a). The empirical evidence shows that the combined announcement returns from diversifying deals are positive (e.g., Graham et al., 2002; Villalonga, 2004a; Akbulut and Matsusaka, 2010),[28] and more interestingly, the market response to diversification takeovers announcements tends to vary over time (e.g., Akbulut and Matsusaka, 2010).[29]

To sum up, the UK is the largest corporate control market in Europe and the second largest worldwide after the US. The UK M&A market experienced an increasing trend both in terms of number of deals and value of takeover transactions during the period 1990-2008. Similar to other developed countries (for example the US), the pattern of UK M&A activity shows two takeover waves before the financial crisis began, the "fifth" merger wave (1993-2001) and "the millennium boom" (2003-2007). This growth in takeover activity was due to industry shocks, such as excess capacity, deregulation or technological innovation. Cross-border transactions are another

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[28] However, other recent studies distinguish between industrial and global diversification and find that deals that increase global diversification (Moeller and Schlingemann, 2005; Barnes and Hardie-Brown, 2006; Freund et al., 2007) and industrial diversification (Moeller and Schlingemann, 2005; Freund et al., 2007) exhibit lower announcement returns for acquirers.

[29] In this line of research Akbulut and Matsusaka (2010) examine the impact of diversification over the last six decades (1950-2006) and report the highest returns in the 1960s and 1970s, and lower returns in the late 1970s and 1980s, which is consistent with the well-known view that internal capital allocation was valuable in the 1960s and 1970s because external capital markets were underdeveloped, but the advantages of internal capital markets disappeared in the 1980s as external capital markets have become more efficient.

important driver of the significant increase in M&A activity during the period 1990-2008, and the UK market is regarded as the most internationally open market worldwide. The finance literature focuses on the shareholders' value to assess the takeover success and adopts the abnormal shareholder return as a proxy for shareholders' wealth effects from an acquisition. Finally, the main deal characteristics, such as the method of payment, the deal strategy, the legal status of the target, the industry relatedness and the geographic scope, have a significant impact on the acquirers' and targets' stock return.

## 2.3 The Motivation of Targets for Manipulating Reported Earnings

Mergers and acquisitions are complex corporate events that involve the coming together of two companies, the acquiring and target firm. To develop the research hypotheses formulated in the next chapters, the first part of this section presents the underlying theoretical framework for earnings manipulation by targets in M&A, while the second part will discuss in detail both the benefits and costs of earnings management from the targets' perspective. Specifically, three main theoretical hypotheses will be presented in the first part of this section: the asymmetric information hypothesis (Hansen, 1987), the financial incentives hypothesis (Shleifer and Vishny, 2003) and the takeover defence hypothesis (Easterwood, 1997). All of these hypotheses focus on the shareholders' wealth perspective.

The second part of this section focuses on the role of targets' managers' specific incentives to manage earnings and shareholders' benefits from takeovers. This

differentiation between targets' managers' and shareholders' motives to agree to merge or be acquired is crucial for a good understanding of the rationale of the earnings manipulation preceding the deal as their interests do not always coincide.[30] For example, a takeover can lead to a high premium for targets' shareholders, but loss of managerial jobs. Therefore, the second part of this section will present the general benefits and costs of earnings management from a target's perspective, then the specific benefits and costs of earnings management from the targets' managers' perspective will be analysed. The empirical evidence on benefits and costs of earnings management by targets will also be presented in the second part of this section.

## 2.3.1 Asymmetric Information Hypothesis and M&A

Given the high uncertainty of inputs and outcomes of any deal, the M&A process is considered to be a two-agent bargaining game between the acquirer and target under imperfect information. In the M&A literature, this is referred to as the asymmetric information hypothesis (Hansen, 1987). Under the asymmetric information hypothesis, both the acquirer and the target are assumed to have better information than the other side involved (or the market) in a takeover about its assets and opportunities. Thus, the acquirer believes that the target firm knows its value better than itself, and the target assumes that the acquirer has a better knowledge of its value than itself. The information asymmetry between the acquirer and target leads to adverse selection or "buying a lemon" problem. For example, the acquirer may worry about

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[30] In the UK all the takeover offers are made to the shareholders (even in friendly mergers), which could lead one assume that the role of targets' managers in the UK is not significant. However, the example of Blue Circle hostile bid launched by Lafarge in 2000, and the subsequent successful sale to the same company in 2001 represent a strong evidence of the pivotal position of targets' managers' in the takeover process (Angwin et al., 2004).

selecting a target whose price is higher than its economic value, and the target may worry about accepting the price offer and the method of payment (cash vs. stock).

The information asymmetry problem is more pervasive when only the target has an information advantage with respect to its own value because the acquirer will prefer to make a stock offer as it shares the risk of overpayments with the targets' shareholders. Prior studies document evidence consistent with Hansen (1987) model of information asymmetry, showing that the acquirers' stock returns are significantly higher in stock-for-stock acquisitions of difficult-to-value targets due to the mitigation of informational asymmetry between the acquirer and target (e.g., Officer et al., 2009). Moreover, the information asymmetry problem concerning a privately held target is the greatest relative to a publicly traded target as privately held companies are less transparent than publicly listed companies. In particular, stock-for-stock takeovers, among various corporate control transactions, have been frequently identified as transactions with the highest potential for opportunistic earnings management by both acquirers and targets. In stock-for-stock takeovers, the acquirer exchanges its stock with target's shareholders for the stock of the target, which is almost always newly issued stock used in this type of transaction. The number of shares of acquirer stock is typically determined based on a negotiated exchange ratio agreed on by the acquirer and target directly and depends on the target's current stock price, or alternatively on its appraised stock value. However, the information asymmetry problem occurs in all types of M&A deals regardless of the method of payment (cash vs. stock-for-stock transactions), the legal status of the target (publicly listed vs. privately held) and the deal strategy (friendly vs. hostile).

## 2.3.2 Financial Incentives Hypothesis

From the perspective of the target's shareholders, the takeover success is assessed in terms of the wealth effects of M&A deals (short-term or long-term stock return, and deal premium). In a takeover, the exchange ratio agreed in stock-for-stock deals or cash payment in cash deals is usually set so that the target's shareholders receive a significant premium above the current open market price of its shares. Therefore, target's shareholders generously gain in the short-run if they sell the shares received in exchange (Shleifer and Vishny, 2003). Evidence on stock price performance of targets shows that the average short-term abnormal return gained by shareholders in tender offers and mergers is positive and ranges from 16% (with an event window equal to 3 days) to 27% (with an event window equal to 11 days) in the US and the UK results for the short-term are similar to those in the US (Sudarsanam, 2003).

Regarding the deal premium received by the targets' shareholders, there is strong evidence that targets' shareholders make substantial gains in M&A in the form of deal premium. The relationship between targets' stock price and shares issued in stock-for-stock transactions provides even stronger incentives for the targets to manage earnings. The evidence provided by Moeller et al. (2004) shows that the average (median) premium paid for US public acquisitions with announcement dates between 1980 and 2001 was 68% (61%) for large firms and 62% (52%) for small firms. In the UK public mergers and acquisitions, a more recent study by Antoniou et al. (2008) indicates that the average (median) premium between 1985 and 2004 was 89% (78%) for large firms and 10% (11%) for small firms.

Assuming that the market is inefficient, if targets can increase their share price prior to a deal, and the acquirer's shares are used as a medium of exchange, then the manipulation of earnings can lead to a higher price for the takeover and ultimately a higher premium for the targets' shareholders. The evidence on market rewards for meeting and beating analysts' expectations suggests that managers can systematically fool the market by artificially boosting the targets' stock price (e.g., Barth et al., 1999; Xie, 2001; Bartov et al., 2002; Skinner and Sloan, 2002; Pincus et al., 2007).

To sum up, the evidence on deal premiums and stock returns by targets' shareholders strongly suggests that the shareholders' wealth benefits in M&A are so high that they implicitly generate strong financial incentives for targets to increase reported earnings prior to a merger, which is further referred to as the financial incentives hypothesis.

## 2.3.3 Takeover Defence Hypothesis

A further rationale for targets to manage earnings prior to a takeover may be a response to earnings manipulation by the acquiring firm. If a target rationally anticipates that the acquirer has managed pre-takeover earnings, it would have even stronger incentives to manage its own reported earnings in order to receive a higher premium from the acquiring firm (takeover defence hypothesis as first formulated by Easterwood (1997). In Easterwood (1997)'s paper, the adoption of income-increasing accounting procedures and accruals are viewed by the author as a "takeover defence", a response to the acquirer's strategy. With respect to the target's response to earnings management by the acquirer, Louis (2004) suggests that the managers of the targets should have enough incentives and expertise to detect earnings management by the acquiring firm.

Furthermore, Erickson and Wang (1999) posit that, "it seems reasonable to believe that both the acquirer and the target would rationally anticipate that the other would manage pre-merger earnings, and that each would adjust the transaction price for this anticipated earnings management" (Erickson and Wang, 1999, p. 154). This suggests that if the acquirer overstates prior earnings, then the target can anticipate the degree of earnings manipulation and implicitly adjusts its reported earnings upward in order to gain a higher deal premium. As documented by extensive strong evidence (e.g., Erickson and Wang, 1999; Louis, 2004; Koumanakos et al., 2005; Louis, 2005; Botsari and Meeks, 2008; Gong et al., 2008), the acquirer is very likely to increase the reported earnings prior to a stock-for-stock merger in order to raise the market price or the appraised price of its stock and implicitly to lower the cost of acquiring the target. Particularly in the UK, Botsari and Meeks (2008) find that acquirers engage in income-increasing accruals manipulation ahead of stock-for-stock transactions, and this manipulation is mostly concentrated on the working capital component of accruals.

However, there are also costs associated to the targets behaviour towards earnings manipulation. The main costs of earnings management by targets include scrutiny provided by auditors, financial advisors which are often hired by the acquirer during the due diligence process and the potential litigation penalties (Graham et al., 2005).[31]

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[31] The specific costs associated to the targets' earnings manipulation behaviour will be discussed in detail in the next subsections.

## 2.3.4 Managerial Opportunism versus Efficiency Rationale to Manipulate Reported Earnings

Takeovers affect the targets' shareholders and managers differently. Why would targets' managers consent to a stock-for-stock or cash deal under imperfect information? Most empirical studies on earnings management in M&A assume managerial opportunism as the main rationale of the behaviour of targets' managers in accounting choice process, which suggests that targets' managers select income-increasing accounting methods to maximise their own wealth at the expense of other stakeholders. On the other hand, little evidence suggests that maximising firm value is a more important goal of a targets' manager than managerial opportunism.

In addition, the acquirers can also buy targets' managers' agreement through the acceleration in the exercise of stock options, by granting them generous severance pay, or by keeping them in top positions (Shleifer and Vishny, 2003). Examining the private benefits of targets' managers in completed mergers and acquisitions, Hartzell et al. (2004) find that in addition to equity incentives, such as stock and option appreciation, targets' CEOs negotiate large cash payments in the form of special bonuses (side payments) or increased golden parachutes as part of takeover agreements. More importantly, Hartzell et al. (2004) provide evidence that the targets' shareholders earn lower acquisition premium in transactions involving extraordinary personal treatment of the CEOs. They also show that the self-interested managers of targets will also bargain over such items as who will occupy the CEO position in the merged company, who will

sit on the board of directors, and especially management compensation (Hartzell et al., 2004).

In exchange for relinquishing control of the targets, managers may extract increased financial wealth gains or receive attractive positions in the management team of the merged company, possibly negotiating less favourable acquisition terms at the expense of targets' shareholders. The evidence regarding the relationship between the private benefits of target firm CEOs and shareholders' premium clearly suggests a trade-off between the personal benefits of targets' managers and shareholders' interests (e.g., Hartzell et al., 2004).

Regarding the costs of lost economic rents and control or past investments in firm-specific human capital which the targets' CEOs experience in post-takeover, Hartzell et al. (2004) also find a very large incidence of job losses for targets' managers. Their results show that few of them become top executives at the acquirer or merged firm, and survival rates for targets' CEOs who receive a position within the acquirer or merged firm are quite low relative to the normal rate observed in the literature. Even worse, a large majority of targets' CEOs who leave the company do not obtain further employment in the corporate management market, they end up retired or working in the public sector (Hartzell et al., 2004).

However, many of the results of prior research on earnings management in M&A, interpreted as evidence of managerial opportunism, can be considered as occurring for efficiency reasons. The efficiency rationale suggests that targets' managers engage in accounting accruals manipulation (so called expected amount of opportunism) to increase the current market share price if this can lead to a stronger negotiating power within M&A. Efficient managerial actions will lead to firm-value maximising by increasing the aggregate wealth of stakeholders, including the managers, after all the contracting costs.

While most studies assume managerial opportunism as the main motive for earnings management, Christie and Zimmerman (1994) approach is different as they consider both managerial opportunism and efficiency as rationales for targets' managers' manipulation behaviour. To examine the accounting choice of targets' managers, Christie and Zimmerman (1994) differentiate between unexpected and expected managerial opportunism and focus only on opportunistic accounting choice defined as the income-increasing accounting methods in excess of those expected, given the information at the time the accounting choices are made. In particular, they measure opportunism by comparing the frequency of choice of income-increasing procedures (depreciation, inventory and investment tax credit accounting methods) with the frequency of their surviving industry peers in up to 11 years preceding the M&A deal. The authors find that a low amount of accounting opportunism exists in their takeover targets, but that efficiency is the more important explanation of the choice of income-increasing accounting procedures. Their results suggest that maximising firm value is more important for targets than managerial opportunism.

The relative amounts of efficiency and opportunism depend on controls on managerial accounting discretion, such as monitoring by the board of directors, product market competitions and market for corporate control. To assess the predicted final effect of managerial discretion on reported earnings, the related costs and benefits to targets' managers to manipulate earnings are examined here. Therefore, the next subsections present a comprehensive classification of managerial incentives and costs of earnings management. However, this review of costs and benefits of earnings management is not exhaustive.

# 2.4 Managerial Incentives of Earnings Management

The targets' managers' motives for earnings management are various and sometimes competing. Rational managers would not engage in accounting manipulation in the absence of expected benefits which imply that they try to alter financial reports to either mislead shareholders and other stakeholders about the financial performance of the company, or to influence the accounting-based contractual outcomes. However, managerial incentives to manipulate earnings are reduced by the associated costs, such as those arising from audit qualifications, regulation enforcement sanctions, or management reputation effects.

The classification of managerial benefits of earnings management in this chapter is based on prior earnings management literature reviewed by Fields et al. (2001), Dechow et al. (2010) and Hanlon and Heitzman (2010). Consistent with Fields et al. (2001), there are two main categories of earnings management incentives: asset pricing or capital market incentives, such as stock-based compensation, managerial ownership and other earnings-based target incentives, and non-capital market incentives, such as contracting incentives and motivations to influence external parties.

## 2.4.1 Capital Market Incentives

The capital market incentives literature examines whether accounting choices affect equity valuation, the goal of managers is to influence stock prices by pursuing

various financial reporting objectives, such as earnings-based targets: maximising current earnings, avoiding losses, smoothing earnings over time or avoiding earnings declines.

Stock-based compensation and managerial ownership are corporate governance mechanisms used to align short-run managers' incentives and long-run shareholders' interests (e.g., Jensen and Meckling, 1976; Morck et al., 1988). Theoretically speaking, the more shares that managers own, the more likely they are to act in the shareholders' interests. However, managers' wealth is sensitive to the short-run stock price, which can motivate managers with high equity incentives to manage earnings upward and implicitly to increase the stock price in order to maximise their wealth. In this respect, examining the personal benefits of targets' managers extracted in takeovers, Hartzell et al. (2004) find that a large majority of the financial benefits obtained by the targets' managers arise from stock and option appreciation if the target CEOs have significant stock holdings within the company because shareholders as a group receive a premium price from the acquirer.

The evidence on the relationship between managers' equity incentives, such as stock-based compensation and stock ownership, and earnings management also suggests that high equity incentive managers are more likely to sell shares in the future and to report earnings that meet/beat analysts' expectations (e.g., Cheng and Warfield, 2005). In this respect, Fuller et al. (2002) and Coffee (2003) argue that stock-based compensation and managerial ownership lead to stronger incentives for managers to manipulate earnings, and consequently to increase stock prices. More surprisingly, Cheng and Warfield (2005) also find a lower incidence of reporting large earnings surprises for managers with high equity incentives, which is consistent with the earnings smoothing hypothesis.

Regarding the incentives provided by earnings-based targets, many studies have identified a "kink" in the distribution of reported earnings around zero, a statistically small number of firms with small losses or small profits (Burgstahler and Dichev, 1997). A common, but controversial interpretation in the literature, is that small profits and small loss avoidance would be an indication of earnings management as firms with unmanaged earnings just below the target of "zero" (such as firms with small losses) attempt to manipulate earnings enough to report a small profit. Similarly, it is generally accepted that small earnings increases might be an indication of earnings management based on a statistically small number of firms with small decreases as firms with small earnings declines are more likely to manage earnings upward to meet/beat analysts' forecasts.

The evidence on whether small profits and small loss avoidance are indications of earnings management based on the "kink" in the distribution of reported earnings around zero, is mixed. Dechow et al. (2003) find that discretionary accruals for small profit firms are similar to those for small loss firms. However, other studies suggest that small profits are associated with earnings management, such as the use of discretionary loss reserves or aggressive revenue recognition (e.g., Beaver et al., 2003; Phillips et al., 2003; Altamuro et al., 2005).

The evidence that earnings are more likely to be managed when firms meet/beat analysts' expectations is pervasive. Some papers examine various mechanisms/tools that firms use to generate earnings that meet or beat an earnings-based target, such as: managing tax expenses (e.g., Dhaliwal et al., 2004), managing the classification of income statement items (e.g., McVay, 2006), managing the restructuring charge accruals (e.g., Moehrle, 2002), repurchasing stock (e.g., Hribar et al., 2006) and selling fixed assets or marketable securities (e.g., Herrmann et al., 2003). While these studies provide evidence of a relationship between discretionary accruals and meeting/beating analysts'

forecasts, firms can manipulate earnings using income-increasing or income-decreasing accounting methods to meet consensus forecasts (Dechow et al., 2010).

Most of the empirical studies on earnings management in M&A fall into this category of accounting choices as they examine whether acquirers or targets manage earnings though accruals manipulation (e.g., Christie and Zimmerman, 1994; Erickson and Wang, 1999; Louis, 2004; Koumanakos et al., 2005; Botsari and Meeks, 2008; Braga-Alves et al., 2009; McNichols and Stubben, 2009; Cohen and Zarowin, 2010; Raman et al., 2013). Their results show that firms with managers that overestimate earnings have significant levels of positive abnormal accruals. However, these findings are also consistent with the compensation and debt hypotheses.

## 2.4.2 Non-Capital Market Incentives

The second category of earnings management incentives have also been widely documented in the literature. The contractual motivations, among other non-capital market motives for earnings management, are termed the "efficient contracting perspective" in the literature (e.g., Holthausen and Leftwich, 1983; Watts and Zimmerman, 1986). The contractual arrangements include compensation agreements and debt convenants which are meant to litigate the agency conflicts between managers and other stakeholders by better aligning the managers' incentives.

Earnings-based contracts (executive compensation contracts and debt convenant contracts) provide managers incentives to choose those accounting methods in order to achieve their financial reporting objectives, such as increasing their compensation and reducing the likelihood of debt convenant violations. Efficient contracting suggests that the accounting discretion that the managers exercise may allow

managers to increase their compensation; such discretion also aligns their interests with those of shareholders (Watts and Zimmerman, 1986). An example of this is when higher reported earnings that lead to higher compensation may also result in higher stock prices and lower likelihood of bond covenant violations.

Prior research provides evidence that managers exploit their accounting discretion provided by compensation contracts to increase their personal wealth (e.g., Healy, 1985; Holthausen et al., 1995). For example, Healy (1985) finds that managers use discretionary accruals to manipulate earnings and hence maximise both their current and future bonus. In particular, they manage earnings upward when earnings are expected to fall between the upper and lower bound. In contrast, when earnings fall above the upper bound or (significantly) below the lower bound, managers use income-decreasing accounting methods to maximise their future compensation. Guidry et al. (1999) provide support for this bonus plan hypothesis. However, Gaver et al. (1995) report evidence inconsistent with this hypothesis, their results suggest that managers select income-increasing accruals (and vice versa) when pre-managed earnings fall below the lower/higher bound (income-smoothing hypothesis).

Debt contracts also provide strong incentives to managers to manipulate earnings. In this respect, managers select or change accounting methods to avoid debt convenant violations, which in literature is referred to as the debt convenant hypothesis. The evidence of literature on whether accounting choices are driven by debt convenant concerns is inconclusive. However, the results of most studies are consistent with the debt convenant hypothesis (e.g., Healy and Palepu, 1990; DeAngelo et al., 1994; DeFond and Jiambalvo, 1994; Sweeney, 1994).

The final category of non-capital market motives for earnings management is that of influencing third parties. When third parties, such as government regulators, suppliers, competitors and union negotiators, use financial statements to make various

decisions, managers may have an incentive to manipulate earnings to influence these third parties decisions. The most common hypotheses tested in the literature are that firms select accounting methods to reduce or defer taxes, and to avoid potential industry regulation, such as political costs hypothesis.

Most of the research on tax-based motivations for accounting choices examine the effect of tax rates changes on accounting choices (e.g., Boynton et al., 1992; Dhaliwal and Wang, 1992; Guenther, 1994) or focuses predominantly on the choice between LIFO and FIFO (e.g., Hand, 1993; Cloyd et al., 1996). These studies report evidence that firms select accounting choices to reduce tax burden and implicitly to increase their cash flows. However, like similar papers on accounting choice, they consider the tax motivation in isolation, rather than considering the trade-off between tax and non-tax motivations.

Prior research on the industry regulation-related accounting choice suggests that managers choose accounting methods to increase shareholders' wealth. Some studies investigate the accounting response to specific constraints, such as capital adequacy ratio guidelines in the banking industry (e.g., Moyer, 1990; Kim and Kross, 1998). Others focus on political costs of overly profitable companies (e.g., Han and Wang, 1998). Two papers, Beatty et al. (1995) and Collins et al. (1995), use a different approach by considering the multiple incentives faced by banks to manipulate their earnings. In particular, Beatty et al. (1995) examine five accounting choices made by banks using a model that incorporates the effects of taxes, regulatory capital and reported earnings as incentives for accounting manipulation. Collins et al. (1995) also examine the relations among capital, tax and earnings incentives and find cross-sectional differences in banks' responses to these incentives using as control factors size, growth and profitability.

To sum up, the motives of targets' managers for earnings manipulation are various and competing. The capital market incentives, which are considered to be of

first-importance in M&A studies, are concerned about whether managerial accounting discretion affects the stock price of targets by attempting to achieve different earnings-based target objectives, such as maximising current earnings, avoiding losses and large earnings surprises, smoothing earnings, beating/meeting analysts' forecasts and implicitly increasing managers' personal wealth. The contractual motivations and incentives to influence third parties, have almost been completely ignored by empirical studies on earnings management in M&A, even though the managerial discretion exercised to increase managers' stock compensation and to avoid debt convenant violations may also lead to strong incentives for targets' managers to manipulate earnings in M&A.

## 2.5 Earnings Management Constraints in M&A

Even though the benefits of earnings manipulation by targets in M&A (including deal premium and stock returns) are significantly high, there are also costs associated to the targets' behaviour towards earnings manipulation. As part of the M&A due diligence process, the acquirers can hire and use effectively expert accountants, auditors and financial advisors to evaluate the targets' financial statements. The acquirer and its advisors are informed users of accounting information and are likely to be familiar with various earnings management tactics which the target may deploy. Therefore the costs of detection could be significant for the target and may lead to a lower exchange ratio or threat of cancelling the transaction if earnings management is detected. Furthermore, the targets' managers and board of directors are subject to shareholder litigation if they do not perform their fiduciary duties on behalf of the

targets' shareholders, so they have strong incentives to assure that the financial statements of the acquirer, including earnings, are free of material accounting manipulation (Botsari and Meeks, 2008).

The costs of earnings management by targets also include scrutiny provided by their own auditors, financial advisors if hired by the acquirer and potential litigation penalties (e.g., DuCharme et al., 2004; Graham et al., 2005). The next subsections discuss the main costs associated with earnings management in the M&A: audit costs, governance and controls-related costs, political costs, probability of detection, costs associated to reversal of accruals, GAAP flexibility-related costs, the external factors-related costs and due diligence-related costs.

## 2.5.1 Audit Costs

Prior research finds that auditors have a crucial role in constraining earnings manipulation (Dechow et al., 2010) and their ability to mitigate misstatements depends on their ability to detect earnings management and to adjust for or report it (e.g., DeFond and Subramanyam, 1998; Francis et al., 1999; Kim et al., 2003; Nelson et al., 2003). For example, Nelson et al. (2003) provide survey evidence that auditors' ability to detect misstatements is a function of its effort and effectiveness and depends on auditors' benefits and costs, such as reputation costs, independence and litigation risk. Regarding the auditor reputation, prior research shows that firms with Big-X auditors[32] have lower discretionary accruals than firms with non-Big-X auditors (e.g., DeFond and Subramanyam, 1998; Francis et al., 1999; Kim et al., 2003). The explanation is that Big-

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[32] This term is used for Big-eight, Big-six, or Big-five auditors depending on the time of auditing (Dechow et al., 2010).

X auditors are more experienced, invest more resources in auditing, and therefore, they care more about their reputation.

Other empirical studies focus on auditor tenure to measure the auditors' effort/effectiveness, however, the evidence of studies examining the relationship between auditors' tenure and discretionary accruals is mixed (e.g., Johnson et al., 2002). In the same line of research, evidence based on hours spent auditing and auditors' industry expertise (used as proxies for auditors' ability to detect, adjust for and report misstatements) shows that both are negatively associated with discretionary accruals (e.g., Krishnan, 2003; Caramanis and Lennox, 2008). To sum up, the conclusion of most studies on the role of auditors in the financial reporting process is that auditors constrain accruals earnings management.

In the UK, with the exception of very small companies, by company law financial accounts must be audited by a professional independent auditor who must express his/her opinion as to whether a financial statement gives a fair and true view of the firm's affairs and has been prepared in accordance with legislation and relevant accounting standards. Based on the board of directors' recommendation, shareholders elect a particular external auditor to verify management's responsible conduct of stewardship. To further assure their independence from the CEO, external auditors are overseen by the internal audit committee. Users of financial statements, such as shareholders, managers, government, creditors and investors, rely on audited reports and auditing gives credibility to company's financial statements. However, the auditor litigation exposure that drives the audit quality is lower in the UK than the US (Khurana et.al., 2004).

## 2.5.2 Governance and Controls

The main aspects of the corporate governance system which are often most documented in the literature to affect earnings management are as follows: the characteristics of board of directors (for example, board size and structure, such as fraction of outside board directors), the internal control procedures (for example, the presence of audit committee), ownership structure, managerial share ownership (such as CEO equity ownership), managerial compensation (for example, bonus compensation or option compensation) and managerial change (turnover).

The empirical studies on earnings management investigate the characteristics of board of directors and internal control procedures as they are generally viewed as constraints of managers' ability to manipulate reported earnings through accruals (e.g., Klein, 2002; Farber, 2005; Ashbaugh-Skaife et al., 2007; Doyle et al., 2007). There is strong evidence suggesting that internal control procedures are associated with less earnings management (e.g., Ashbaugh-Skaife et al., 2007; Doyle et al., 2007) and management turnover is an efficient mechanism that mitigates earnings manipulation (e.g., Dechow and Sloan, 1991; Pourciau, 1993; Geiger and North, 2006).

Some empirical studies also show that more independent boards of directors and higher quality audit committees are negatively associated with earnings management (e.g., Klein, 2002; Abbott et al., 2004; Farber, 2005; Vafeas, 2005). Audit committees are an Anglo-Saxon corporate governance mechanism and the effective audit committee is expected to ensure good corporate governance and to give financial reporting credibility. The role of the audit committee in the UK has expanded over time, the Cadbury Committee (1992) first recommended the formation of audit committees and that the

audit committee should have a minimum of three members, and its membership be confined to non-executive directors. This minimum size was supported by the Smith Report (2003) and included in the Combined Code (2003). Furthermore, the Higgs Report (2003) also stressed the importance of the independence of non-executive directors and requires that audit committee be comprised of whole independent directors (Collier and Zaman, 2005). In terms of audit committee expertise, the Smith Report (2003) required that at least one member should have significant recent and relevant financial expertise. Finally, the Turnbull Report (1999) has widened the responsibilities of audit committee in respect of internal controls and risk management, and the Smith Report (2003) also expands their responsibilities concerning reporting and external audit (Collier and Zaman, 2005). Currently, the audit committee in the UK has duties of oversight of in the following five areas: external and internal audit, risk/internal control reporting by the board, financial reporting and external auditor selection or dismissal.

More evidence on the impact of audit committee on financial reporting is provided by Dechow et al. (1996) who also find that earnings manipulation is systematically related to weaknesses in internal governance structures of firms subject to SEC enforcement actions. For example, they claim that earnings manipulators are less likely to have an audit committee, more likely to have a company founder as CEO, more likely to have a CEO who is also the Chairman of the Board, more likely to have a board of directors dominated by insiders and less likely to have an external blockholder overseeing the management (Dechow et al., 1996). However, there is also no evidence about the effectiveness of the audit committee in the UK provided by prior literature (e.g., Peasnell et al., 2000).

Managerial share ownership and managerial compensation are also predicted to influence earnings quality as they provide incentives to managers for earnings

manipulation. However, the results of prior research examining the relationship between ownership and earnings management metrics are mixed. Some studies find that greater managerial ownership has an entrenchment effect which means that managers with high share holdings extract benefits at the expense of minority shareholders (e.g., Lafond and Roychowdhury, 2008). Other studies, however, provide evidence consistent with the incentive alignment hypothesis which predicts that great managerial ownership ensures better alignment of managers and other shareholders interests (e.g., Warfield et al., 1995; Gul et al., 2003).

The studies examining the relationship between managerial compensation, such as bonus plans, earnings-based compensation, stock options and insider trading and earnings management are numerous and their results are also mixed (e.g., Healy, 1985; Skinner, 1993; Holthausen et al., 1995; Beneish, 1999; Guidry et al., 1999; Darrough and Rangan, 2005; Bergstresser and Philippon, 2006; C. S. Armstrong et al., 2010). These studies try to match a specific form of compensation-related incentives to a specific earnings management objective, such as smoothing and earnings based target beating, by using a specific mechanism to achieve the objective, such as discretionary accruals (Dechow et al., 2010).

### 2.5.3 Political Costs

Positive accounting theory claims that managers tend to manipulate earnings to decrease political costs (Watts and Zimmerman, 1986), which are commonly measured by size (total assets and market capitalisation) in the literature on earnings management. Researchers have examined whether there is a relationship between firm size and earnings management, however the evidence is mixed and depends on the accounting

choice studied and sample/setting used in the empirical analysis (Dechow et al., 2010).

For example, some papers from 1980-1990 suggest that firm size would be negatively associated with earnings quality as larger companies are more likely to use income-decreasing accounting methods in response to greater political/regulatory scrutiny (Jensen and Meckling, 1976; Watts and Zimmerman, 1986).

In contrast, more recent research finds that large firms are less likely to manipulate earnings due to their high public visibility (e.g., Lang and Lundholm, 1993; Dechow and Dichev, 2002). Another possible explanation for the negative association between firm size and discretionary accruals for large firms is that large firms have high fixed costs of maintaining adequate internal mechanisms (Ball and Foster, 1982). Inversely, small firms are more likely to use earnings management methods and restated financial statements as they often have internal control deficiencies (e.g., Kinney and McDaniel, 1989; Ge and McVay, 2005; Ashbaugh-Skaife et al., 2007; Doyle et al., 2007).

To conclude, most of the studies on earnings management use firm size as a control factor and the evidence regarding the association between firm size and earnings management is mixed.

### 2.5.4  Probability of Detection

This cost is generated by the probability that actions of firms engaging in earnings management will be eventually uncovered. DuCharme et al. (2004) find evidence of a positive association between accruals earnings management and the probability of shareholders' litigation for SEO firms. Beneish (1999) also documents a positive association between total accruals and the probability that a firm will be the target of a SEC enforcement action. In addition, Gong et al. (2008) examine the

interaction between pre-merger accruals manipulation and post-merger announcement lawsuits, and find a positive association between accruals earnings management and post-merger lawsuits, and more importantly, that post-merger long-term abnormal returns are negatively associated with the probability of a post-merger lawsuit which suggests that legal costs associated with earnings management are serious and an important driver of the stock-for-stock merger underperformance.

## 2.5.5 Reversal of Accruals

The most obvious potential cost of income-increasing earnings management is associated with the reversal of accruals, in particular abnormal accruals (as a proxy for earnings management) reverse mechanically in the short-term which leads to a decrease in reported earnings. For example, expenses that are understated in the current period will necessary be overstated in a future period, therefore reducing the reported earnings. Since total discretionary accruals have to sum to zero over a firm's life, overstated earnings in one period must reverse in the future periods. As a result, these reversals will lower the reported earnings of the future periods (e.g., Dechow, 1994; Kasznik, 1999; Barton and Simko, 2002; Choy, 2012). Furthermore, prior empirical research finds evidence that the reversal of abnormal accruals has a negative impact on stock return (e.g., Rangan, 1998; Teoh et al., 1998b).

## 2.5.6 GAAP Flexibility and Changes to UK Accounting Standards

Accruals earnings management is limited by GAAP, and non-GAAP financial-reporting has serious negative legal and capital market consequences. For example, Dechow et al. (1996) examine a sample of firms alleged to have violated generally accepted GAAP by overstating their reported earnings, and find that a SEC enforcement release is followed by an average stock price drop of 9%, which suggests that the potential cost of earnings management is high. In addition, they also find a decline in analysts following an increase in bid-ask spreads and an increase in the cost of capital after the release.

Similarly, some studies have examined the stock market consequences of earnings restatements and provide evidence of significant negative stock returns associated with restatements (e.g., Palmrose et al., 2004). For example, Palmrose et al. (2004) document an average abnormal return of -9% over a 2-day announcement window, which illustrates the high cost of detection of earnings management. As with SEC enforcement actions, revenue restatement is the most common cause of restatements. However, there are other types of restatements, so called noncore restatements, which involve misstatements of a variety of special, one-time transactions and events, such as asset impairments, restructuring, mergers and acquisitions, discontinued operations, and extraordinary items (e.g., Palmrose and Scholz, 2004). Restatements involving recurring items are also more likely to lead to litigation. In this respect, Palmrose and Scholz (2004) find a significant association between regular, recurring earnings restatements and litigation, which suggests that revenue misstatements is more costly to firms than earnings manipulation through other means.

Due to the limited flexibility within the GAAP and the reversal of accruals, managers' earnings management behaviour is also constrained by previous period's abnormal accruals (Barton and Simko, 2002).

In the literature on corporate financial reporting, similar to the US and other Anglo-Saxon countries, the UK is considered to belong to the common-law countries with well-developed stock markets, dispersed ownership structures, strong protection of investors and strong legal enforcement (e.g., La Porta et al., 1998; Nobes, 1998; Ball et al., 2000; Leuz et al., 2003). In contrast to civil-law countries in which companies with centralised and familial ownership prevail and finance tend to be mainly provided by banks and creditors, in the UK there is strong reliance on equity finance, the interests of shareholders dominate and financial reporting is typically oriented towards meeting the needs of these investors. In this environment, financial reporting plays an important role to ensure transparency, which is a crucial factor in ensuring capital market efficiency (Ball, 2006).

Formal accounting regulations in the UK had first existed in the form of Statements of Standards Accounting Practice (SSAPs) and then later on in Financial Reporting Standards (FRSs). They all have been equity-market oriented. The UK accounting regulations and practice have tended to focus on the management's stewardship compared to the US GAAP and International Financial Reporting Standards (IFRS),[33] which are more oriented towards firm's valuation (Paananen and Parmar, 2008). Under the management's stewardship view, the focus is on income statement which provides more useful information compared to the fair value approach under which the focus lies on the balance sheet information to value the company.

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[33] In this thesis International Financial Reporting Standards (IFRS) refer to both IFRS issued by the International Accounting Standard Board (IASB) and International Accounting Standards (IAS) issued by the International Accounting Standards Committee (IASC).

In the context of the European Union (EU) accounting harmonization, the UK financial reporting system had changed as a result of the adoption and implementation of the European Commission (EC)'s Directives in the 1980s and later in the 1990s. The Fourth Directive and the Seventh Directive were the most influential in the EU and were adopted to create an integrated European market by establishing a common set of accounting standards that would lead to more comparable and transparent financial statements to facilitate cross-listing and cross-border investment in the EU. The Fourth Directive specified the "true and fair view" as a principle of financial reporting and defined the format and measurement of income statement and balance sheet. The Seventh Directive set requirements for consolidation and applied the "true and fair view" principle to consolidated financial statements.

The intent of adopting the EU's directives was to make information more value-relevant and more useful to investors to make decisions, however their effectiveness in the UK is questionable. Historically, the UK had already applied the "true and fair value" principle, focused on equity holders and offered more discretion in the preparation of financial statements. In this respect, Joos and Lang (1994) examine the effects of differences in accounting measurement practice in the EU subsequent to the adoption of the directives and find that UK firms had higher ROE, E/P and Book-to-market ratios than German firms. However, earnings do not explain stock prices more in the UK than in Germany. Joos and Lang (1994) argue that observed differences in accounting in the UK and Germany could be explained by the cross-country differences in accounting philosophy and practice which questions the effectiveness of the directives in reducing accounting diversity in the EU.

The mandatory adoption of IFRS in the EU in 2005 represents the most important step towards global GAAP harmonization. Almost all of the EU countries were legally required to adopt IFRS in their consolidated financial statements. Unlike

German and Swiss companies, UK publicly listed companies were not permitted to voluntarily adopt IFRS before 2005, but IFRS became mandatory for UK listed companies from 2005. IFRS is widely considered as a single set of international accounting standards reflecting a largely common-law approach of transparent and timely disclosure (Ball et al., 2000), that was developed to satisfy the needs of investors from these countries where public disclosure resolves the informational asymmetry between managers and financial statement users (Christensen et al., 2007).

The main advantages of IFRS for investors widely suggested by the literature are more accurate, comprehensive and timely financial statement information, increased transparency, reduced information cost and risk, lower cost of firm's equity capital and increased efficiency of contracting between firms and their managers (Ball, 2006).

The adoption of IFRS, which are principle-based accounting standards, has been found to have conflicting effects on the financial reporting process. While the inherent flexibility in principles-based standards could generate greater opportunity for firms to manage earnings (Barth et al., 2008), tighter accounting standards (like IFRS) also reduce the variability of reported earnings and increase the value-relevance of earnings, which in turn will lower the level of accrual-based manipulation (Ewert and Wagenhofer, 2005). Therefore, the main question is whether or not the net effect of adopting IFRS on earnings quality is positive and IFRS is successful in producing higher-quality reporting.

Prior studies on IFRS and its consequences on accounting quality are mainly based on data where firms voluntarily adopted IFRS. The majority of these studies examine financial reporting of German firms as Germany was one of the pioneers with respect to allowing the early adoption of IFRS (e.g., Van Tendeloo and Vanstraelen, 2005; Goncharov and Zimmermann, 2006; Barth et al., 2008; Paananen

and Parmar, 2008). These studies use various methods to investigate the impact of the adoption of IFRS and their results are mixed. For example, Van Tendeloo and Vanstraelen (2005) and Goncharov and Zimmermann (2006) find no differences in earnings management between German firms voluntarily applying IFRS and firms applying local accounting standards prior to 2001. In contrast, among more recent studies, Barth et al. (2008) argue that firms applying IFRS (voluntarily adopters from 21 countries) up to 2003 exhibit lower levels of earnings management, more timely recognition of losses and a higher association of accounting amounts with share price and returns than a control sample of firms using local accounting standards.

Due to its relative novelty and limited data, the amount of research on the impact of the mandatory adoption of IFRS in the UK and other non-German countries on earnings management is limited. Christensen et al. (2007) argue that the costs and benefits of IFRS adoption vary across firms, and the mandatory IFRS adoption in the UK results in relative winners and losers. They focus on the UK setting as firms did not have the option to comply with IFRS voluntarily and, furthermore, the disclosure quality in the UK is perceived to be generally high. Therefore it is questionable as to whether IFRS leads to an improvement for all firms. Christensen et al. (2007) estimate a proxy for firm's willingness to adopt IFRS, and find evidence of a positive relationship between the market reaction to the adoption of IFRS and firm's willingness to adopt it. In addition, they argue that the change to the cost of equity is negatively related to the firm's willingness to adopt IFRS. In the same line of research, Paananen and Parmar (2008) claim that since the adoption of IFRS in the UK investors focus more on book value of equity and less on earnings numbers, which suggests a shift away from the management's stewardship approach towards a firm's valuation approach.

Extending Ball et al. (2003) work on the interaction between incentives and accounting standards in determining accounting quality, more recent literature has

examined the effect of the mandatory introduction of IFRS on earnings quality and the role of management incentives in financial reporting practice. For example, Jeanjean and Stolowy (2008) examine the pervasiveness of earnings management in Australia, France and the UK and argue that management incentives and national institutional factors have an important role in framing financial reporting characteristics. Thus, their results show that the pervasiveness of earnings management increased in France and remain stable in the UK and in Australia, which suggests that the switch to IFRS was not a major vector of improvement in terms of earnings quality (Jeanjean and Stolowy, 2008).

Christensen et al. (2007) also argue that incentives dominate accounting standards in determining earnings quality and find that voluntarily adoption in Germany is associated with decreased earnings management and more timely loss recognition as the voluntarily adopters have incentives to comply with IFRS. However, there is no evidence of higher-quality earnings for firms that are forced to adopt IFRS (Christensen et al., 2007). Finally, Daske et al. (2013) examine the economic consequences of IFRS for voluntarily adopters from 26 countries and their results suggest that on average capital markets respond modestly to IFRS reporting. Daske et al. (2013) extend prior studies by focusing on the impact of compliance with IFRS and, however, find that "serious" adopters exhibit higher market liquidity and lower cost of capital than "label" adopters around the time of the introduction of IFRS. This suggests that the cost of equity is only reduced when adopters have strong management incentives to comply with IFRS and adoption is serious (Daske et al., 2013).

Related to this stream of the literature is the discussion of whether tighter accounting standards can lead to a substitution effect, specifically whether IFRS can restrict the discretion for accruals manipulation which in turn will lead to increased

real-activity earnings management. When analysing the economic effects of IFRS on earnings management (measured by the variability of reported earnings and by the association between reported earnings and market price reactions), Ewert and Wagenhofer (2005) distinguish between accounting and real-activity earnings management and their focus is on the marginal benefit of real-activity earnings management. Based on their expectation model, Ewert and Wagenhofer (2005) argue that there is a link between accounting and real-activity earnings management caused by the change in earnings management. More importantly, tighter accounting standards make accruals earnings management less effective, which in turn increases costly real-activity earnings management as the higher earnings quality increases the marginal benefit of real-activity earnings management (Ewert and Wagenhofer, 2005).

In summary, the UK is widely viewed as a common-law country (along with US, Canada and Australia) and its equity market-oriented accounting system is perceived as high quality (e.g., La Porta et al., 1998; Nobes, 1998; Ball et al., 2000; Leuz et al., 2003). The UK accounting standards have developed significantly from SSAPs to FRS and finally to IFRS. Thus, the UK accounting system has also been shaped by its EU membership and the adoption and development of IAS/IFRS (which are principle-based standards more oriented towards firm's valuation). However there is no clear evidence of the effectiveness of the EU directives in the UK. The results of prior studies on mandatory adoption of IFRS in the UK and their impact on accounting quality are mixed. Mandatory IFRS adoption seems to benefit only firms that have incentives to comply with IFRS (Christensen et al., 2007) and the degree of earnings management is likely to be unchanged in the UK (Jeanjean and Stolowy, 2008). Finally, the impact of IFRS adoption on earnings quality is conditional on the effect of the substitution of accounting by real-activity earning management.

## 2.5.7 Other External Factors-Related Costs and Takeover Regulation in the UK - A Shareholder Oriented Approach

Researchers suggest that external factors, including capital requirements, political processes, takeover, tax and non-tax regulation have a significant impact on earnings management (Dechow et al., 2010). In this respect, some studies provide evidence that firms engage in income-decreasing earnings management if they face costly regulatory intervention or political outcomes (e.g., Jones, 1991; Han and Wang, 1998; Monem, 2003).

The most commonly researched regulation is capital requirements, in particular in the banking and insurance industries (e.g., Petroni, 1992; Ahmed et al., 1999; Schrand and Wong, 2003). Different studies that examine the impact of capital requirements relative to other incentives find that capital incentives are of first-order importance when capital requirements are likely to be binding (e.g., Beatty et al., 1995; Chen and Daley, 1996; Gaver and Paterson, 1999).

Tax regulations are another most common determinant of earnings management as the regulations constrain earnings manipulation (e.g., Hunt, 1985; Guenther, 1994; Maydew, 1997). Their results, however, are mixed. The Sarbanes-Oxley (SOX) regulation has also been commonly documented in the earnings management literature. Evidence suggests that firms' accruals manipulation declines following SOX, but firms use more real-activity earnings management as an alternative to accruals earnings management (e.g., Cohen et al., 2008). In the earnings management literature,

certain proxies are used to control for specific tax-related costs, such as dummy variables for regulated industries, pre- or post-regulation or a high litigation industry.

Takeover regulation, which represents the regulatory framework within takeovers are conducted in any country, generates further significant costs of earnings management by targets. In the UK, which has the oldest takeover regulatory regime, this framework is in the form of the City Panel on Takeovers and Mergers (the Takeover Panel) and the City Code on Takeovers and Mergers (the Takeover Code).

Unlike US takeover regulation system, where takeover bids are regulated by state courts,[34] the Takeover Panel is a self-regulatory system, both a rule-making and a rule-enforcing body, which includes representatives of investment institutions, their trade associations, banks, the accounting profession and industry (Sudarsanam, 2003). The Takeover Panel's enforcement powers have increased as a result of the implementation of the EU's Takeover Directive in 2004, which is mainly based on the British model of takeover regulation.

Another important characteristic of the Takeover Code is that it prescribes a clear timetable for the conduct of bids. For example, a formal offer, once made, may not remain open for more than sixty days (Sudarsanam et al., 1996). Furthermore, the Takeover Panel can resolve bidding disputes and regulatory issues quickly and with minimum uncertainty. Therefore, takeover litigation is almost non-existent in the UK (Armour and Skeel, 2006).

In terms of the content of takeover regulation, the UK Takeover Code represents the collective opinion of professionals, such as investment bankers and

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[34] Most of the US takeover bids are regulated by State Courts, which mostly means the Delaware judges and Supreme Court. The tender offers involving publicly listed companies are regulated mostly by the Securities and Exchange Commission (SEC) and the primary source of securities regulation would be a mandatory federal oversight by Congress and the SEC (Armour and Skeel, 2006). While the SEC role is limited mainly to policing disclosure and after-the-fact fraud, Delaware judges are responsible for the most significant aspects of takeover regulation. Therefore, the US mode of takeover regulation is mostly a judge-made law.

institutional investors, involved in takeovers and adopts a shareholder-oriented approach and rejects managerial discretion (Sudarsanam, 2003). Moreover, the self-regulation of takeovers is driven by the interests of institutional investors (Armour and Skeel, 2006).

The principles and rules of the Takeover Code are based on fair and equal treatment of shareholders in relation to takeovers. The fair and equal treatment of shareholders is promoted mainly through three important rules: "the mandatory bid" rule, "the board neutrality" rule and "no frustrating action" rule. "The mandatory bid" rule requires bidders acquiring 30% or more of the voting rights to make a cash offer (or a share offer with a cash alternative) for all the targets' shares. The "board neutrality" rule prohibits targets from taking frustrating action without shareholders' approval.[35] The targets' board can seek alternative bids, but cannot give its opinion on offers and their consequences on the company, shareholders and employees.

Furthermore, according to the "no frustrating action" rule, unless shareholders consent, the Code strictly prohibits management for using poison pills or any defensive tactics that would frustrate an actual or potential takeover (Armour and Skeel, 2006; Jackson and Miyajima, 2007). Consequently, the UK Takeover Code is viewed as a benign regime that does not discriminate against hostile takeovers (Sudarsanam and Mahate, 2006) and its ban on defensive actions by managers makes it easier for hostile deals to succeed (Armour and Skeel, 2006).

In contrast, the US regulation is much friendlier to managers than shareholders. For example, it gives bidders complete flexibility to acquire as small or as large a percentage of the target's shares and there is no "mandatory bid" rule for bidders who acquire a large block of shares to make an offer to all the target's shareholders. In

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[35] The UK takeover regime is considered to be the most restrictive of frustrating actions of the board (e.g., Jackson and Miyajima, 2007).

addition, managers have almost complete discretion to resist an unwanted takeover bid by using various defences, such as poison pills, a staggered board, breakup fees and other lockup provisions (Armour and Skeel, 2006).

Finally, the main conclusion drawn from these studies of external factors is that their effects on earnings management is time-varying and external factors lead to or constrain accruals manipulation, while their effect on earnings management is ongoing if external factors impact accounting choice and generate changes in firm behaviour (Dechow et al., 2010). The most important external factor in M&A which acts as a constraint of earnings management is takeover regulation regime. Unlike US takeover regulation, which is a more manager-friendly, the UK takeover regime is shareholder-oriented, and rules and takeover decisions are made by the Takeover Panel who provides informal regulation.

## 2.5.8 M&A Due Diligence, Information Asymmetry and Constraints on Earnings Management

Due diligence is a fundamental aspect of the M&A process which consists of information gathering and verification by both parties (Wangerin, 2012). By its nature and scope, M&A due diligence plays a crucial role in constraining managers' ability to manipulate earnings. Both acquirers and targets can conduct due diligence to assess the potential synergies and acquisition value for their shareholders.[36] Anilowski et al. (2009) find that pre-announcement due diligence is performed by acquirers in 82% of deals, whereas targets only conduct due diligence in 40% of deals. However, the acquirers and

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[36] The scope of due diligence has increased over time and covers a wide range of issues: commercial, operational, financial, tax, organizational and cultural, human resources, information system and legal issues (Sudarsanam, 2003).

targets differ in terms of the scope and variety of due diligence: the acquirers tend to go for extensive due diligence, whereas targets prefer less rigorous due diligence (Sudarsanam, 2003).

It is widely believed that due diligence has a crucial role on reducing the information risk to both parties (e.g., Anilowski et al., 2009; Wangerin, 2012; Skaife and Wangerin, 2013). The main benefits of rigorous due diligence highlighted by prior literature are lower information asymmetry between the acquirers and targets (or reduced uncertainty about the future cash flows of the merged company) and opportunity to get more up-to-date and precise private information which is useful for assessing the target value (Anilowski et al., 2009; Wangerin, 2012).[37] With regard to its time of occurrence and information role played in the M&A process, prior literature distinguishes between three phases of the due diligence process: preliminary due diligence, due diligence review and transactional due diligence (Wangerin, 2012; Skaife and Wangerin, 2013). The preliminary due diligence takes place during the preliminary stage of the due diligence process (before the acquisition agreement is signed by both parties) when the acquirer gathers and evaluates public information about the target, therefore they became more informed about the target's resources and liabilities.

The due diligence review is the second phase of the due diligence process which begins after the parties sign a confidentiality agreement and commit to negotiating a deal. Acquirers obtain and evaluate private information about the target, such as internal financial statements, management reports and projections, and also conduct site visits, interview key target employees and analyse existing review research projects (Skaife and Wangerin, 2013). The last phase, the transactional due diligence, is the most important

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[37] However, there are also costs associated with due diligence, primarily in the form of extent fees paid to third parties advisors, such as accountants, investment banks and financial advisors, as well as costs due to disruptions of daily operations for both targets and acquirers, and diversion of management attention from other important business issues (Wangerin, 2012).

and gives acquirers more extensive access to private information and the opportunity to check the accuracy of accounting information received during the entire due diligence process. Depending on the transactional due diligence outcome, the acquirer can decide either to terminate or complete the deal at the completion of this phase.

Despite its crucial importance in the M&A process, there are only a few prior empirical studies examining the direct consequences of due diligence on post-acquisition performance (success/failure) and financial reporting (e.g., Wangerin, 2012; Skaife and Wangerin, 2013). For example, Wangerin (2012) examines the relationship between information risk to acquirers and due diligence, and finds that acquirers performing low due diligence experience lower post-acquisition accounting profitability and lower long-term returns. In addition, Skaife and Wangerin (2013) argue that targets with low quality financial reporting (measured by discretionary accruals, weaknesses in internal control, off-balance sheet liabilities and analysts' forecast error and dispersion) are more likely to get involved in unsuccessful bids and these targets tend to issue restated financial statements after termination, which suggests, as highlighted by Sudarsanam (2003) and Cullinan et al. (2004), that acquirers can identify financial reporting problems through due diligence and then abandon the deal. In the same line of research, Anilowski et al. (2009) argue that both the extent and timing of information gathering during due diligence are significantly affected by the method of sale (auction vs. negotiation),[38] and they find that negotiating acquirers are more likely to detect potential earnings management by targets than auctioning acquirers.

To sum up, the empirical evidence to date shows that pre-announcement due diligence seems to be standard procedure for acquirers, and the due diligence process enables the acquirers to make better valuation judgements and reduce the risk of

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[38] Anilowski et al. (2009) find that in auctions targets can limit the extent and timing of the information sharing on confidentiality grounds. Therefore, the risk of earnings management detection is reduced.

overpayment. Therefore, the information asymmetry between acquirers and targets in M&A is substantially reduced. Consequently, the risk of accounting fraud detection by both acquirers and targets is greater.

## 2.6 Conclusions

This chapter first presents an overview of M&A environment in the UK, and second examines the benefits and costs of earnings manipulation. Prior literature shows that the UK had the highest level of takeover activity at about 21% of GDP (whereas US M&A activity totalled only 10.7% of GDP) during the period 1998-2005 (Jackson and Miyajima, 2007), and the M&A market experienced an increasing trend both in terms of the number of deals and the value of takeover transactions during the period 1990-2008. As documented  by prior literature, the pattern of UK M&A activity shows two takeover waves before the financial crisis began: the "fifth" merger wave (1993-2001) and "the millennium boom" (2003-2007) (Sudarsanam, 2003; Martynova and Renneboog, 2008). This growth in takeover activity was due to industry shocks, such as excess capacity, deregulation or technological innovation (Jackson and Miyajima, 2007). Cross-border transactions are another important driver of the significant increase in M&A activity during the period 1990-2008 (Jackson and Miyajima, 2007).

The first part of this chapter also discusses the perspectives used to assess the success of a takeover and the measurement of shareholders' wealth effects, and provides empirical evidence on the relationship between deal characteristics and abnormal stock return. A large body of M&A literature shows that the method of payment, the targets' attitude towards the deal, the status of the target, the industry

relatedness and the geographic scope affect the outcome of a takeover (e.g., Andrade et al., 2001; Sudarsanam, 2003; Goergen and Renneboog, 2004; Kini et al., 2004; Moeller et al., 2004; Moeller and Schlingemann, 2005; Draper and Paudyal, 2006; Faccio et al., 2006; Martynova and Renneboog, 2006).

Finally, the second part of this chapter presents the main hypotheses underlying the targets' earnings manipulation behaviour: the asymmetric information hypothesis (Hansen, 1987), the financial incentives hypothesis (Shleifer and Vishny, 2003) and the takeover defence hypothesis (Easterwood, 1997). This part also examines the most important management incentives to manipulate reported earnings and costs of detection, and provides empirical evidence on these significant determinants of earnings managements. Thus, numerous studies document that managers with strong capital market incentives (such as stock-based compensation and managerial ownership) as well as non-capital market incentives (such as compensation, debt convenant contracts, and tax effects) are likely to engage in earnings manipulation to mislead investors and other stakeholders about the financial performance of the company (e.g., DeFond and Jiambalvo, 1994; Holthausen et al., 1995; Burgstahler and Dichev, 1997; Fuller et al., 2002; Hartzell et al., 2004). However, prior research also shows that the scrutiny provided by auditors, board of directors and financial advisors (specifically involved in the M&A due diligence process), as well as internal control procedures, political costs, probability of detection, reversal of accruals, GAAP flexibility and other external factors (including takeover related costs) have a crucial role in constraining earnings manipulation (e.g., Lang and Lundholm, 1993; DeFond and Subramanyam, 1998; Barton and Simko, 2002; Klein, 2002; Nelson et al., 2003; DuCharme et al., 2004; Palmrose and Scholz, 2004; Doyle et al., 2007).

The next chapter provides a review of the earnings management literature. In particular, it presents and discusses the definitions and strategies of earnings

management, the accruals and real-activity earnings management methodology and the

consequences of both earnings manipulation techniques.

# Chapter 3 Definitions, Strategies, Measurement and Consequences of Earnings Management

## 3.1 Introduction

Consistent with the objective of this thesis, the previous chapter provides an overview of the M&A activity in the UK and presents in-depth the benefits and costs of earnings manipulation in this context. This chapter reviews the earnings management literature, in particular the definitions and strategies of earnings management, and discusses the empirical models used to test accruals and real-activity earnings management. Furthermore, within this chapter a comparative analysis between combined strategies of earnings management based on both accruals and real-activities and simple strategies based on either accruals or real-activities is performed.

Prior research provides evidence that firms use multiple earnings management strategies based on accruals and real-activities (e.g., Graham et al., 2005; Roychowdhury, 2006; Cohen and Zarowin, 2010; Gunny, 2010; Zang, 2011). However, there is no clear evidence on how managers choose between accruals manipulation and real-activity earnings management. The extant literature shows that firms may follow an overall management strategy using a mix of real-activities and accruals earnings management

tools, or alternatively, they can choose between the two management techniques, using the technique that is the least costly for them (Cohen et al., 2008).

Given the importance and complexity of earnings management behaviour, this chapter reviews the most relevant studies on accruals and real-activity manipulation. Furthermore, as the purpose of this thesis is to examine the occurrence of accruals and real-activity earnings management in the M&A context, this chapter presents the differences between these two main methods of earnings manipulation in terms of costs and consequences, and in particular distinguishes between combined strategies of earnings management based on accruals and real-activities and simple techniques based either on accruals or real-actions. Furthermore, the consequences of both accruals and real-activity earnings management strategies on operating performance and stock prices are discussed to highlight the importance of this topic not only for academics, but also for investors, auditors, regulators and accounting standards setters.

The remainder of this chapter is organised as follows: section two provides the main definitions of accruals and real-activity earnings management and discusses the main differences between these two methods of earnings manipulation. Section three presents the evidence on accruals earnings management and real-activity manipulation in M&A, and analyses the most commonly used techniques of accruals and real-activity earnings management. The main differences between simple and combined methods of earnings management are also reviewed within this section. Section four discusses the main differences between simple and combined methods of earnings management. Section four presents the empirical models employed in the literature to test the accruals and real-activity earnings management hypothesis. Section five discusses the consequences of earnings management behaviour. Finally, section six concludes this chapter.

## 3.2 Definitions of Earnings Management

Earnings management has attracted considerable attention especially from academics. More interest has been given to this research issue since the notorious accounting scandals of Enron, Worldcom, Nortel, AIG and Lehman Brothers were revealed. Despite many attempts to define earnings management in the literature, academics still have no consensus on what earnings management is. Four main representative definitions of earnings management are discussed in detail in this chapter. The definition has a crucial role in interpreting the evidence provided by various studies testing the earnings management hypothesis.

According to Schipper (1989), earnings management or "disclosure management" is defined as a

> *"....purposeful intervention in the external financial reporting process, with the intent of obtaining some private gain (as opposed to, say, merely facilitating the neutral operations of the process)....A minor extension of this definition would encompass 'real' earnings management, accomplished by timing investment or financing decisions to alter reported earnings or some subset of it"* (Schipper, 1989, p. 92).

Schipper (1989)'s definition is concerned with the managers' actions undertaken within the context of financial reporting and also deals with real-activity earnings management through its extension to the definition. However, this could be confusing

for readers as timing real decisions, for example those implying that managers delay profitable investment projects, are considered to be a means of managing earnings.[39]

The most widely-used definition of earnings management in the literature is that by Healy and Wahlen (1999). Healy and Wahlen (1999) state:

> *"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).*

This comprehensive definition first refers to the judgment which managers exercise in the financial reporting process. In particular, they can choose to make or defer revenues and expenditure associated with depreciation (straight-line or accelerated depreciation methods), working capital management (inventory valuation methods, inventory levels, purchases and receivable policies), research and development and advertising or maintenance. Another important aspect of the Healy and Wahlen (1999)'s definition is that it frames the objective of earnings management as being to mislead some stakeholders about the economic performance of the firm (Healy and Wahlen, 1999).

Finally, earnings management always involves costs and benefits. While costs are defined as the potential misallocation of resources that occurs from earnings management, benefits are concerned with a potential improvement of the management's communication to the public, which leads to better resource allocation decisions made by external stakeholders. However, Healy and Wahlen (1999)'s

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[39] Accruals earnings management and real-activity earnings management as alternative/substitute ways of manipulation of reported earnings will be discussed further within this section.

definition captures only the opportunistic nature of manipulation of earnings, where earnings management is used to mislead stakeholders.

A main contribution to clarifying the concept of earnings management is made by Beneish (2001), who distinguishes between two perspectives on earnings management: the opportunistic perspective and the information perspective. While the opportunistic perspective captures the negative connotation of earnings management under which managers seek to mislead investors, the information perspective deals with the positive connotation of management discretion as a means of enhancing the signal in reported earnings. Therefore, "....under the information perspective of earnings management.....managerial discretion is a means for managers to reveal to investors their private expectations about the firm's future cash flows" (Beneish, 2001, p. 5).

Furthermore, Ronen and Yaari (2008) classify previous definitions of earnings management as white, grey and black, based on their capacity to capture the opportunistic and signal enhancing behaviour of managers and their compliance with the existing GAAP:

> *"Beneficial (white) earnings management enhances the transparency of reports; the pernicious (black) involves outright misrepresentation and fraud; the grey is manipulation of reports within the boundaries of compliance with bright-line standards, which could be either opportunistic or efficiency enhancing" (Ronen and Yaari, 2008, p. 25).*

According to their classifications, Schipper (1989) and Healy and Wahlen (1999)'s definitions are considered to be "black" ones as they tend to focus on the misleading nature of earnings management, while Beneish (2001)'s definition is classified as a "white" definition as, unlike the two previous ones, it also allows earnings management to occur under the information perspective, therefore enhancing the financial reporting function of management.

Given the perceived issues with previous attempts to define earnings management, Ronen and Yaari (2008) offer an alternative definition of earnings management:

> *"Earnings management is a collection of managerial decisions that results in not reporting the true short-term, value–maximising earnings as known to management. Earnings management can be beneficial (which signals long-term value), pernicious (which conceals short-term or long-term value) and neutral (it reveals the short-term true performance). The managed earnings result from taking production/investment actions before earnings are realised, or making accounting choices which affect earnings numbers and their interpretation after the true earnings are realised" (Ronen and Yaari, 2008, p. 27).*

This detailed definition has three main advantages. Firstly, it emphasises the short-term value/performance as opposed to long-term value/performance as earnings are reported quarterly or annually, which leads to fixation on short-term goals. Secondly, this definition is based on the existence of a true earnings number (short-term truth) that is value-maximising in the long-term. Finally, it broadly defines how earnings management is achieved considering both accruals and real-activity earnings management. However, even though it is clearer and broader than the previous definitions, Ronen and Yaari (2008)'s concept of true short-term, value-maximising earnings number is difficult for academics, practitioners and regulators to implement as the management's intent to manipulate earnings is unobservable.

All the above four definitions agree that earnings management imply managers' intent to alter financial results in order to mislead or inform investors, but none of them explicitly states whether earnings management is done in accordance with accounting standards. In other words, none of them answers the question: when does the appropriate exercise of managerial discretion become earnings management? Some

authors argue that while managerial choices which violate accounting standards clearly constitute both earnings management and fraud (financial fraud is an extreme form of earnings management), earnings management can also occur within the bounds of accounting standards (e.g., Dechow and Skinner, 2000). In the same vein, Nelson et al. (2003) classify earnings management into two main categories, namely within GAAP earnings management and outside GAAP earnings management. Furthermore, analysing the illegal nature of earnings management, Parfet (2000) argues that to some extent, earnings management is acceptable; a so called good type of management, which is defined as reasonable and proper practices that are part of operating a well-managed business and delivering value to shareholders.

Given the key aspects of all these four definitions, this thesis defines earnings management as all the financial reporting and operating decisions made by the firm's managers with the objective of misleading some stakeholders, regardless of whether these decisions are made in accordance with accounting standards or by violating them. This definition refers to three important aspects. Firstly, both accruals and real-activity earnings management can be used by managers to mislead stakeholders. Secondly, even if unobservable, the objective of earnings management is to alter reported earnings by increasing or decreasing it. Finally, earnings manipulation can be made either within or outside of accounting standards. Therefore, in the context of this thesis earnings management represents not only the fraud cases, but also manipulation of reported earnings within the bounds of accounting standards.

# 3.3 Methods of Accruals and Real-Activity Earnings Management. Evidence on Earnings Management

Recent research suggests that managers can use various earnings management methods to meet earnings benchmarks. As the survey conducted by Graham et al. (2005) shows, managers can normally take two types of action to maintain accounting appearances: namely, accounting decisions and real economic decisions. This section presents various methods of accruals manipulation and the main types of real-activities undertaken by firms to increase or decrease reported earnings. The evidence on earnings management will also be discussed in this section.

## 3.3.1 Accruals Earnings Management Techniques and Empirical Evidence

A large amount of research has been devoted to studying earnings management through discretionary total accruals and working capital accruals manipulation (e.g., Sloan, 1996; Healy and Wahlen, 1999; Dechow and Skinner, 2000; Beneish, 2001). A number of accruals earnings management techniques are potentially available to managers. They can attempt to manipulate reported earnings through changing the accounting policy, such as depreciation methods, inventory valuation methods or purchases and receivable policies. Two other options available to managers to manipulate earnings are altering the accounting estimates, such as estimation of bad

debt allowance, estimation of expected lives and salvage values of long-term assets, and altering the timing of revenue and expense recognition. Thus, as purely financial reporting decisions, there are three main categories of earnings management techniques, in particular accounting methods changes, accrual choices or estimates and altering the timing of revenue and expense recognition. However, changes to accounting policy are more costly and less efficient than accounting estimates and altering the timing of revenue and expense recognition as any change of accounting policies has to be disclosed under the consistency principle (Healy and Wahlen, 1999).

A comprehensive classification of accruals earnings management techniques is provided by Nelson et al. (2003), who find evidence about specific earnings management attempts identified and characterised by auditors from one Big-5 firm. Thus, the main and most frequently used types of accruals manipulation involve expense recognition (such as, recognising too much or too little restructuring or bad-debt reserves in the current year, recognising too much or too little asset impairment and modifying amortisation), revenue recognition (such as deferring too much or too little revenue and bill and hold sales), issues unique to business combinations (such as, over or under-stating assets, liabilities and offset with goodwill, and over or under-stating expenses in the period of acquisitions) as well as such issues as income-statement classification and off-balance-sheet financing (Nelson et al., 2003).

## 3.3.2 Real-Activity Earnings Management Techniques and Prior Evidence

As an alternative to accruals earnings management, real-activities have received more attention recently (e.g., Graham et al., 2005; Roychowdhury, 2006; Cohen et al.,

2008; Gunny, 2010; Chen et al., 2011; Zang, 2011). Schipper (1989) is one of the first authors to include real-activity manipulation in her definition of earnings management.[40] Following the general definition of earnings management by Healy and Wahlen (1999), real-activity manipulation is defined as departures from normal operational practices which are motivated my managers' desire to mislead at least some stakeholders into believing that certain financial reporting goals have been met in the normal course of operations (Roychowdhury, 2006). This definition is somewhat confusing as the concept of normal operational practices introduced by Roychowdhury (2006) is not sufficiently explained.

A much clearer definition[41] of real-activity earnings management is provided by Zang (2011), who defines real-activity earnings manipulation as "a purposeful action to alter reported earnings in a particular direction, which is achieved by changing the timing and structuring of an operation, investment and financing transactions and which has suboptimal business consequences" (Zang, 2011, p. 676). Healy and Wahlen (1999), Dechow and Skinner (2000), Graham et al. (2005), Roychowdhury (2006) and Zang (2011) point to the acceleration of sales, overproduction, reduction of capital investment, research and development (R&D) expenditure, maintenance and selling, general and administrative expenses (SG&A) and sales of profitable assets, as real-activity earnings management methods available to managers. Some of these above mentioned operational activities, such as price discounts and reduction of discretionary expenditure, can be optimal decisions in certain economic circumstances, however, if managers use these activities more extensively with the objective of meeting/beating earnings benchmarks, they are engaging in earnings manipulation (Roychowdhury, 2006).

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[40] See definitions of earnings management within the previous section of this chapter.
[41] Within the thesis, this definition of real-activities earnings management is used to examine earnings manipulation by UK publicly listed targets.

Real-activity earnings management can lead to a reduction in firm value as managers' decisions to increase reported earnings in the current period can have negative consequences on cash flows in future periods. For example, overproduction generates excess inventories which have to be sold in the future periods and implicitly greater inventory holding costs for the firm. While the main costs of real-activity earnings management are the economic consequences of deviating from optimal business operations and therefore, jeopardising the firm's competitive advantage, accruals manipulation is costly primarily because of auditors' and regulators' scrutiny and litigation risk (e.g., Zang, 2011). However, relative to accruals earnings management, real-activity earnings management is more costly due to its long-term consequences and managers being willing to sacrifice economic value to manipulate reported earnings.

Prior literature on earnings management has focused mainly on four types of real-activities: (1) sales manipulation, (2) production costs manipulation, (3) discretionary expenditure manipulation (including the discretionary reduction in R&D) and (4) timing the sales of fixed assets to report gains.

### A. Sales Manipulation

Sales manipulation refers to the managers' behaviour to boost sales during the current period to increase reported earnings by cutting prices or extending more lenient credit terms toward the end of the period. By accelerating sales from the next fiscal period to the current one, some managers sacrifice future profits to the additional profits of the current fiscal period. Both price discounts and more lenient credit terms will not only lead to additional unsustainable sales, but also to lower cash flows in the current period. The cost associated with sales manipulation can be a loss in future profitability when the old prices are re-established by the firm. Prior research

documents evidence that managers engage in real-activity earnings management through temporarily increasing sales to achieve various income targets (e.g., Roychowdhury, 2006; Cohen and Zarowin, 2010; Gunny, 2010).

### B. Production Costs Manipulation

Overproducing in any period to spread fixed costs over a larger number of production units and reporting lower costs of goods sold (COGS) can be another way of manipulating reported earnings through production costs. COGS expense manipulation is efficient only if the reduction in per-unit cost is not offset by any increase in marginal cost, such as inventory holding costs, in the current period. Thomas and Zhang (2002) argue that managers engage in earnings management through overproducing to decrease fixed costs per unit and implicitly to boost current earnings. Roychowdhury (2006), Gunny (2010) and Cohen and Zarowin (2010) find evidence of production costs manipulation deployed by firms to avoid reporting losses and improve current profit margins.

### C. Reduction of Discretionary Expenses (R&D, SG&A and Advertising Spending)

Decreases in discretionary expenditure including research and development (R&D), selling, general and administrative expenditure (SG&A) and advertising expenses would boost reported earnings in the current period. However, reducing such expenses could result in higher cash flows in the current period if the firm usually pays these expenses in cash (Cohen and Zarowin, 2010).

Managers can choose to cut investment in R&D, especially if the realisation of the benefits associated with the R&D project would occur in a future period and does not negatively affect the current period's earnings. Under the current international accounting standards, R&D must be charged to expenses incurred due to the uncertainty of future benefits associated with R&D investment. Several empirical studies provide evidence that managers cut discretionary R&D spending to increase reported earnings. For example in the USA, Baber et al. (1991), Bushee (1998) and Cheng (2004) find evidence of managers pruning R&D expenditure to meet short-term earnings targets. However, this myopic behaviour of opportunistic reductions in R&D spending is mitigated by institutional investors (Bushee, 1998) and compensation committees (Cheng, 2004). Moreover, Dechow and Sloan (1991) document that managers spend less on R&D in their final year in office.

More recent research reports evidence of a reduction in discretionary R&D expenditure to improve current earnings and develops empirical measures as a proxy for real-activity manipulation of R&D expenditure (Roychowdhury, 2006; Cohen and Zarowin, 2010; Zang, 2011; Roychowdhury et al., 2012). In the same line of research, Osma (2008) and Osma and Young (2009) find evidence of opportunistic R&D cuts in UK firms motivated by short-term earnings pressures, while independent boards are efficient at constraining real-activity earnings management via discretionary R&D cuts (Osma, 2008).

Similar to R&D spending, some portions of SG&A expenses are subject to managerial discretion. The existing international accounting standards do not recognise intangible assets, such as brands, technology, customer loyalty and human capital, therefore they are recorded as expenditure on the SG&A or advertising account. If managers decide to cut employee-training or advertising programs intended to increase human capital value or create brands and enhance the competitive advantage, these

discretionary expenses cuts can lead to negative long-term consequences, but positive short-term effects (Gunny, 2010). In Graham et al. (2005)'s survey, a large number of managers admit that they engage in real-activity manipulation by reducing discretionary expenses. Recent research also provides evidence of a reduction of discretionary SG&A expenses by firms to report higher current earnings (e.g., Roychowdhury, 2006; Cohen and Zarowin, 2010; Gunny, 2010; Zang, 2011).

### D. Timing the Sales of Fixed Assets to Report Gains

Managers can manipulate reported earnings through the timing of asset sales as they often have discretion over the period during which an asset will be sold and the sale gain (difference between the market value and net book value) will be reported on the income statement at the time of the sales. According to the acquisition cost principle underlying the accounting valuation of assets, if an asset that has unrealised holding gains is sold, the timing of the asset sales will lead to an increase in reported earnings. In contrast, the sale of an asset with unrealised losses will decrease reported earnings. Thus, the timing of asset sales may depend on managers motivation to increase or decrease reported earnings (Bartov, 1993).

Prior literature provides evidence that managers use income from asset sales to smooth inter-temporal earnings changes, to avoid debt-convenant violations and to reduce management forecast errors (e.g., Bartov, 1993; Herrmann et al., 2003). More recent research which examines multiple real-activity earnings management also finds evidence that firms engage in earnings manipulation through the timing of asset sales to meet earnings benchmarks (e.g., Gunny, 2010).

### 3.3.3 Simple versus Combined Strategies of Earnings Management Based on Accruals and Real-Activities

Recent empirical research provides evidence that firms use multiple earnings management strategies based on accruals and real-activities (e.g., Graham et al., 2005; Roychowdhury, 2006; Cohen and Zarowin, 2010; Gunny, 2010; Zang, 2011). For example, Roychowdhury (2006) finds evidence that managers use various forms of real-activity manipulation to avoid reporting losses; specifically, he argues that managers are providing price discounts to temporarily increase sales, overproducing to report lower costs of goods sold and reducing discretionary expenditure (such as R&D, advertising and SG&A) to report higher current earnings. Zang (2011) also finds evidence that managers use both earnings management techniques: accruals and real-activity manipulation.

Another important issue in earnings management literature is how managers choose between real-activity earnings management and accruals earnings management when they have the opportunity to use both. The idea that managers engage in real-activity manipulation and their preference for real-activity techniques rather than accruals techniques is supported by Graham et al. (2005)'s survey evidence, which indicates the widespread usage of earnings management, especially the real-activity methods. They document that:

> *"80% of interviewed executives state that, in order to meet an earnings target, they would decrease discretionary spending on R&D, advertising and maintenance. More than half (55%) reports that they would delay starting a new project to meet an earnings target" (Graham et al., 2005, p. 32).*

Most of the prior literature on accruals and real-activity earnings management suggests that managers use these two main methods of earnings management simultaneously when they have the flexibility to engage in both (e.g., Gunny, 2005; Roychowdhury, 2006; Cohen and Zarowin, 2010). In contrast, Zang (2011) argues that there is a trade-off between accruals and real-activity earnings manipulation based on their relative costs. In this respect, she examines the simultaneity/sequentiality of real-activity and accruals manipulation and provides evidence that managers use both as substitutes in managing earnings, and also that managers change their earnings management strategies in response to the increase in costs associated with the alternative earnings manipulation technique. Specifically, evidence by Zang (2011) is consistent with managers making the real-activity earnings management decisions before the accruals earnings management decisions. Cohen et al. (2008) also find evidence that firms switched from accruals earnings management to real-activity earnings management as a result of tighter disclosure regulation (such as Sarbanes-Oxley Act). To sum up, the extant literature shows that firms may follow an overall management strategy using a mix of real-activities and accruals earnings management tools, or alternatively, they can choose between the two earnings management techniques, using the technique that is less costly for them (Cohen et al., 2008).

There are at least two reasons that possibly explain managers' greater willingness to manipulate earnings through real-activities rather than accruals. Firstly, accruals earnings management is more likely to draw scrutiny from auditors and regulators, and potential litigation penalties than real-activities (e.g., Graham et al., 2005; Cohen and Zarowin, 2010; Zang, 2011; Roychowdhury et al., 2012). In contrast, managers possibly prefer real-activity earnings management as it is easier to camouflage as "normal" compared to accruals manipulation and detection of real-operations is

more challenging or "opaque"[42] for investors than accruals manipulation. Unlike accruals choices which are often subject to accounting standards, there are no clear guidelines for real-activities (Roychowdhury et al., 2012). Managers may turn to real-activity manipulation as a response to increased litigation risk and outside scrutiny (Zang, 2011). In the same line of research, Cohen et al. (2008) claim that firms tend to switch to more real-activity earnings management (which is likely to be more costly for investors, but harder to detect) due to greater regulatory focus on accruals earnings management (such as Sarbanes-Oxley Act in 2002). Furthermore, real-activities are more within the domain of the expertise of managers rather that investors and/or fiduciary agents as auditors (Roychowdhury et al., 2012).

Secondly, relying only on accruals manipulation to boost the stock price is too risky (Cohen and Zarowin, 2010) because of the limited flexibility to manage accruals and timing of earnings management. Accruals earnings management is constrained by the business operations and accruals manipulation in prior years (Barton and Simko, 2002). Thus, after all of the accruals earnings management methods to meet earnings targets are exhausted if reported earnings fall below the desired threshold, managers have no options left as real-activities cannot be undertaken at or after the end of the fiscal reporting period. Therefore, managers are expected to engage in real-activity earnings management during the fiscal year (e.g., Roychowdhury, 2004; Gunny, 2010; Zang, 2011).

Given a greater relative opacity of real-activity manipulation, more recent empirical evidence suggests that at times of heightened scrutiny, such as M&A, earnings management via accruals is unlikely to be a dominant source of overvaluation at the time of a takeover (Cohen and Zarowin, 2010; Roychowdhury et al., 2012). Cohen and

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[42] According to Roychowdhury et al. (2012), relative opacity of earnings management techniques is defined as "the extent to which earnings management strategies succeed in misleading investors", or "the degree to which external investors can detect and unravel their effects on earnings".

Zarowin (2010) find that firms use both accruals earnings management and real-activity earnings management techniques around seasoned-equity offerings (SEO) and the decline in post-SEO operating performance due to real-activities is more severe than accruals earnings management. Consistent with Cohen and Zarowin (2010)'s findings, Roychowdhury et al. (2012) examine the simultaneous occurrence of accruals earnings management and real-activity earnings management around SEO years and find that managers' propensity to engage in real-activity manipulation in SEO years is higher than their propensity to engage in accruals earnings management. Furthermore, their results suggest that real-activity manipulation has more severe consequences in the long-run, in particular post-SEO stock under-performance is more closely related and predictably linked to real-activity earnings management.

In conclusion, more recent research provides evidence that firms use multiple earnings management strategies based on accruals and real-activities, either simultaneously or sequentially and, more importantly, at times of heightened scrutiny such as M&A. Thus, earnings management via real-activities is more likely to be a dominant source of overvaluation prior to a transaction (Roychowdhury et al., 2012).

## 3.4 Measurement of Accruals Earnings Management

Prior literature has employed two major approaches for detecting earnings management: the one-variable approach (e.g., McNichols and Wilson, 1988) and the "portfolio" approach (e.g., Jones, 1991; Dechow et al., 1995; Kothari et al., 2005). While the one-variable approach focuses on a single discretionary accruals component, such as provision for bad-debt or the allowance of uncollectible accounts receivables, the "portfolio" approach focuses on total or current accruals. The majority of studies

employ the "portfolio" approach to test for accruals earnings management as total or current accruals allow a comprehensive snapshot of managers' discretionary accounting choices (Cecchini et al., 2012). These approaches are discussed in detail in the next two subsections.

## 3.4.1  One-Variable Approach

Following this approach, prior studies have used specific accruals components to examine accruals earnings management, such as provision for bad-debts (e.g., McNichols and Wilson, 1988; Cecchini et al., 2012), discretionary component of accounts receivables, inventory, accounts payable, accrued liabilities (e.g., Marquardt and Wiedman, 2004; Cecchini et al., 2012), and special items (e.g., Marquardt and Wiedman, 2004). For example, McNichols and Wilson (1988) develop a model of the unexpected provision for bad-debts as a proxy for earnings management and test the income smoothing hypothesis for firms in three industries: publishing, business services, and non-durable wholesales. Furthermore, their second hypothesis predicts that firms with extreme earnings (either unusually high or low) will choose income-decreasing accruals. Their results are generally consistent with the latter earnings management hypothesis.

In the same line of research, Cecchini et al. (2012) examine two individual accruals accounts to test for earnings management, the allowance for uncollectible accounts and bad-debt expense in the initial public offering (IPO) context. They find that IPO firms have conservative allowances for uncollectible accounts and record larger bad-debt expenses, which suggests that these firms understate receivables-related accruals.

The main advantage of this approach is that the researchers are able to model nondiscretionary components more precisely by incorporating important contextual features of the accruals accounts into their research design (McNichols and Wilson, 1988; Cecchini et al., 2012). However, one of the drawbacks of the one-variable approach is the lack of comprehensiveness or power problem. In particular, if the discretionary accruals measure represents a small part of the total discretionary accruals, it can fail to detect earnings management in situations where other discretionary components are manipulated.

## 3.4.2 "Portfolio" Approach

Consistent with this approach, the majority of studies examine a proxy for the sum of all the discretionary components of accruals to test for earnings management. Based on a comprehensive measure of discretionary accruals, several models have been developed and used to detect earnings management. The milestone in the accruals estimation methodology is the study of Jones (1991). Therefore, most recent research on earnings management employs three main versions of the Jones (1991) model, the cross-sectional Jones (1991) model, the modified-Jones model (Dechow et al., 1995) and the performance-matched Jones model (Kothari et al., 2005). These widely-used models based on the "portfolio" approach are discussed in the following subsections to elaborate the measurement of discretionary accruals. A few other important models are also presented as a benchmark against which these three versions of the Jones (1991) model are compared. Furthermore, a motivation for the choice of the models employed in this thesis to test for earnings management by targets in mergers and acquisitions will be provided in this chapter.

### a) The Healy (1985) Model

Healy (1985) examines whether managers manipulate reported earnings through accruals to meet earnings targets of bonus compensation schemes using a sample of US industrial companies listed in the 1980 Fortune directory. The Healy (1985) model is the simplest of all the expected accruals models and defines non-discretionary accruals ($NDA_{it}$) as the deflated long-run accruals:

$$\text{NDA}_{it} = \frac{1}{n}\sum_t \frac{\text{TA}_{it}}{\text{A}_{it-1}} \qquad\qquad (3.1)$$

Where:

$TA_{it}$= total accruals for firm i in year t.

$A_{it-1}$= lagged total assets for firm i in year t-1.

n= number of years.

In many prior studies, the average is calculated over five years (e.g., Dechow et al., 1995; Thomas and Zhang, 2001). Discretionary accruals are defined as the deviation of total accruals in the event period from the mean total accruals during the estimation period as follows:

$$EDA_{it} = \left(\frac{TA_{it}}{A_{it-1}} - \frac{1}{n}\sum_t \frac{TA_{it}}{A_{it-1}}\right) \qquad\qquad (3.2)$$

Where:

$EDA_{it}$=estimated discretionary accruals for firm i in year t.

$TA_{it}$= total accruals for firm i in year t.

This earnings management test is based on total accruals and the main assumption is that all accruals are discretionary, which holds for zero growth mean-reverting or random walk processes (Ronen and Yaari, 2008). Compared to other accruals models, the Healy (1985) model is expected to contain the largest measurement error since this model does not control for performance. Therefore, the source of the potential measurement error is due to the fact that this methodology identifies normal accruals for abnormal performance as discretionary.

### b) The DeAngelo (1986, 1988) Model

This model assumes that non-discretionary accruals follow a random walk or are constant growth mean reverting, and calculates non-discretionary accruals as the previous period's accruals which are deflated by lagged total assets as follows:

$$NDA_{it} = \frac{TA_{it-1}}{A_{it-1}} \qquad (3.3)$$

The expected accruals are equal to those of last year, and thus, discretionary accruals represent all the changes in accruals:

$$EDA_{it} = \left( \frac{TA_{it}}{A_{it-1}} - \frac{TA_{it-1}}{A_{it-1}} \right) \qquad (3.4)$$

Similar to the Healy (1985) model, there is a measurement error in this model which comes from the omitted variable problem, however this measurement error is lower than that generated by the Healy (1985) model. Most studies nowadays do no use

the DeAngelo (1986, 1988) model to test the earning management hypothesis, but only to compare the efficiency of various models of discretionary accruals.

### c) The Standard-Jones  (Jones, 1991) Model

According to Jones (1991), normal accruals are estimated as a function of the change in revenue and the level of property, plant and equipment. This model is based on the assumption that working capital accruals are related to change in sales and depreciation expense is related to assets. Furthermore, another assumption of the Jones (1991) model is related to the stationarity of expenses; specifically the ratio of accruals from expense transactions to accruals from sales transaction is assumed to be fixed. Thus, the model does not include expenses as an explanatory variable (Ronen and Yaari, 2008). Given these basic assumptions, revenues are used to control for the economic environment of the firm because they represent an objective measure of the firms' operations before managers' manipulations, but they are not completely exogenous. Gross property, plant and equipment are included to control for the portion of total accruals related to non-discretionary depreciation expenses.

The Jones (1991) model is either estimated in time-series or cross-sectionally using a control sample,[43] which normally includes all firms in a given two-digit SIC code

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[43] The basic assumption of the time-series analysis is that the coefficients are time-invariant. Another concern about the time-series approach is that it requires a long estimation period of, on average, at least 11 observations (which could be years in case of studies focusing on annual data) to obtain reliable parameter estimates. Since this requirement implies that the sample firms must have data for at least 11 years, this methodology introduces a selection bias. In response, a multitude of studies uses a cross-sectional estimation approach as this alternative approach employs a larger sample. However, even though the cross-sectional analysis is the standard procedure in earnings management studies, it poses three serious empirical issues to researchers. The first concern is about the appropriateness of the normal accruals benchmark. Another limitation of the cross-sectional estimation analysis is that data on the control sample is contaminated by including cases of earnings management, which introduces a bias against finding evidence of earnings management. Finally, this approach is based on an industry-classification and the assumption of homogeneity within each industry. The customary minimum cut-off number is 6-8 observations per industry-portfolio, so the cross-sectional estimation analysis discards observations of industries with fewer firms.

industry and year. The majority of empirical studies employ the cross-sectional estimation of the Jones model, which takes the following form:

$$TA_{ijp}/A_{ijp-1} = \propto_{jp} (1/A_{ijp-1}) + \beta_{1jp}(\Delta REV_{ijp}/A_{ijp-1}) + \beta_{2jp}(PPE_{ijp}/A_{ijp-1}) +$$

$$\varepsilon_{ijp} \tag{3.5}$$

Where:

$TA_{ijp}$ = total accruals for estimation portfolio $j$ for firm $i$ in event year $p$;

$\Delta REV_{ijp}$ = change in revenues for estimation portfolio $j$ for firm $i$ in event year $p$;

$PPE_{ijp}$ = gross property, plant and equipment for estimation portfolio $j$ for firm $i$ in event year $p$;

$A_{ijp-1}$ = beginning of period total assets for estimation portfolio $j$ for firm $i$ in event year $p$;

$\varepsilon_{ijp}$ = error term for estimation portfolio $j$ for firm $i$ in event year $p$;

$i$ = 1,...., N firm index;

$j$ = 1,...., J estimation portfolio index;

$p$ = 1,...., P year index (for years included in the event period).

In order to reduce heteroscedasticity in the data, all variables in the accruals model are scaled by lagged total assets. The heteroscedasticity problem is reduced by deflation, but it is not completely eliminated. Therefore, following Kothari et al. (2005), an intercept is added conventionally to the estimation of non-discretionary accruals to mitigate the heteroscedasticity problem.

Unexpected accruals or abnormal accruals are defined as the difference between the actual total accruals and the normal component of accruals (estimated or non-discretionary accruals). The parameter estimates, $\hat{\propto}_{jp}$, $\hat{\beta}_{1jp}$, and $\hat{\beta}_{2jp}$ , from equation (3.5) are subsequently used to generate estimated prediction errors that represent the level of discretionary accruals:

$$EDA_{ip} = TA_{ip}/A_{ip-1} - [a_{jp} + b_{1jp}(\Delta REV_{ip}/A_{ip-1}) + b_{2jp}(PPE_{ip}/A_{ip-1})] \qquad (3.6)$$

Where:

$EDA_{ip}$ = estimated discretionary accruals for firm *i* in event year *p*.

The total accruals variable from the Jones (1991) model is computed in the literature using two approaches: the Balance sheet approach and the Cash-flow approach. In this thesis, following Botsari and Meeks (2008), the discretionary total accruals and working capital (current) accruals are defined as follows:

A. Under the Balance sheet approach – the total accruals are the change in non-cash current assets, less the change in current liabilities, excluding the current portion of long-term debt, less depreciation; the working capital accruals are the change in non-cash current assets minus the change in current liabilities.

B. Under the Cash-flow approach – the total accruals are the difference between income before extraordinary items and discontinued operations, and cash from operations; the working capital accruals are the difference between net income before extraordinary items (as reported in the cash flow statement) and operating cash flow (excluding depreciation).

However, the two approaches might yield different figures for a number of reasons. Firstly, the balance sheet approach includes non-current accruals other than depreciation, such as accruals from discontinued operations. Secondly, the balance sheet does not articulate with the income statement. Therefore, Hribar and Collins (2002) find that the balance sheet approach introduces a bias into the measurement of accruals in case of firms with M&A, divestitures, discontinued operations and foreign currency

translations. Therefore, the cash flow approach yields a lower measurement error than the balance sheet approach.

The explanatory power of the Jones (1991) model is relatively low: it can explain only 10% of the variation in accruals due to its misclassification errors. Therefore, this model is subject to both Type I and II errors (Dechow et al., 2010).[44] For example, McNichols (2000) finds that abnormal accruals are correlated with growth and controls for performance by adding rate of return on assets (ROA). Furthermore, Dechow et al. (1995) claims that discretionary accruals from the Jones (1991) model are positively correlated with earnings performance and negatively correlated with cash flow performance. Another criticism of the Jones (1991) model is that abnormal accruals might reflect changes in business conditions, such as change in strategy and operating decisions, rather than discretionary accruals (Healy, 1996). This limitation leads to an omitted variable problem.

### d) The Modified-Jones (Dechow et al., 1995) Model

In an attempt to reduce Type II errors, Dechow et al. (1995) propose a modified variant of the Jones (1991) model, as follows:

$$EDA_{ip} = TA_{ip}/A_{ip-1} - [a_{jp} + b_{1jp}(\Delta REV_{ip}/A_{ip-1} - \Delta REC_{ip}/A_{ip-1}) +$$

$$b_{2jp}(PPE_{ip}/A_{ip-1})] \tag{3.7}$$

Where:

$\Delta REC_{ip}$ = change in accounts receivables for firm *i* in event year *p*.

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[44] As Dechow et al. (2010) define, Type I errors represent misclassification errors that classify accruals as abnormal when they are not signs of earnings management (or they are a representation of fundamental performance), Type II errors classify accruals as normal when they are not.

Compared to the original Jones model, the novelty of the modified Jones model is that the change in revenues is adjusted for the change in receivables. This model assumes that all changes in credit sales in the event period result from earnings management, which is based on the reasoning that credit sales are frequently manipulated. This modification improves the power of the Jones (1991) model, however, the modified Jones model still suffers from Type I errors (Dechow et al., 2010).

As mentioned previously, in cross-sectional analysis, the change in the accounts receivables is subtracted from the change in revenues for estimating the parameters of normal accruals and identifying the abnormal accruals as well. Therefore, a homogeneity problem is generated. In other words, it assumes that all firms in an industry have the same operating technology, which leads to the same normal accruals for a given level of performance, as well as that all firms are at the same stage of the operating cycle. To mitigate this homogeneity problem, the cross-sectional estimation based on two-digit SIC code with industries discards (the minimum cut-off number is 6) is performed in this thesis.

Another problem which can arise when the cross-sectional modified-Jones model is used to detect earnings management is the measurement error problem. Specifically, using cash sales when normal accruals are estimated leads to a biased estimated coefficient of discretionary accruals (managed accruals are overstated when receivables are increasing and understated when receivables are decreasing). To mitigate this measurement error problem in the literature, both methods of calculating accruals, namely the balance sheet approach and the cash flow approach, are used to detect earnings management.

**e)  The Industry (Dechow and Sloan, 1991) Model**

Similar to the Jones (1991) model, this model relaxes the assumption that normal accruals are constant over time and assumes that variation in the determinants of non-discretionary accruals are similar for firms in the same industry. The industry model (Dechow and Sloan, 1991) estimates non-discretionary accruals as follows:

$$NDA_{it} = \gamma_{1i} + \gamma_{2i}(industry\ median\ \frac{TA_{it}}{A_{it-1}}) \tag{3.8}$$

Where:

*Industry median* $\frac{TA_{it}}{A_{it-1}}$ = median value of total accruals scaled by lagged total assets for all non-sample firms in the same 2-digit SIC code.

The firm specific parameters, $\gamma_1$ and $\gamma_2$, are estimated using OLS on the non-missing data in the estimation period (10 years). Then the estimates are used to forecast non-discretionary accruals in the prediction period. The main advantages of the industry model (Dechow and Sloan, 1991) are that it removes variation in non-discretionary accruals that is common to all firms in the same industry, as well as the variation in discretionary accruals that is correlated across firms in the same industry. However, the measurement error induced by the model depends on the homogeneity across the same industry and the extent to which earnings management incentives are correlated across firms in the same industry (Dechow et al., 1995).

**f)   The Kang and Sivaramakrishnan (1995) Model**

This model developed by Kang and Sivaramakrishnan (1995) (KS) does not try to refine the Jones (1991) model. On the contrary, it contributes to the literature by highlighting the neglected elements of the Jones (1991) model. Specifically, the KS model matches the transactions and assets to the working capital accruals that originate from them:

- Revenues (REV), which determine the account receivables (AR);

- Expenses (EXP), which determine the inventory accruals (INV), other non-cash current assets accruals (OCA) and current liability accruals (CL). These accruals are aggregated into one variable, AB, where AB=INV+OCA-CL.

- Gross PP&E (GPPE), which determines the depreciation expense (DEP).

Thus, the KS model assumes the separation between revenues and expenses which reduces the misspecification error when the credit policies for revenues and expenses are not perfectly related (Ronen and Yaari, 2008). This model is summarised by the following equation:

$$AB_{it} = \emptyset_0 + \emptyset_{AR} \left[ \frac{AR^*_{t-1}}{REV^*_{t-1}} REV_{it} \right] + \emptyset_{APB} \left[ \frac{APB^*_{t-1}}{EXP^*_{t-1}} EXP_{it} \right] + \emptyset_{DEP} \left[ \frac{DEP^*_{t-1}}{GPPE^*_{t-1}} GPPE_{it} \right] +$$

$$+ \varepsilon_{it} \hspace{10cm} (3.9)$$

Where:

$AB_{it}$ = unmanaged accrual balances of firm i at the end of period t.

$\varepsilon_{it}$ = white noise.

All the variables are ending balances and those variables with stars (for example $AR_{t-1}^{*}$) denote unmanaged accruals. Kang and Sivaramakrishnan (1995) claim that their methodology mitigates errors in variables, omitted variables and simultaneity problems by applying the instrumental variables (IV) approach and the generalized methods of moments (GMM) rather than OLS, and more importantly, GMM dominates the IV approach.[45]

### g) Performance-Matched Jones (Kothari et al., 2005) Model

Dechow et al. (1995) find that both the cross-sectional standard-Jones model and the cross-sectional modified-Jones model lead to misspecified tests when these models are applied to samples of firms experiencing extreme financial performance, in part because performance and estimated discretionary accruals exhibit a mechanical relation. Given these limitations of the cross-sectional standard-Jones model and cross-sectional modified-Jones model, the linear performance-matched Jones model proposed by Kothari et al. (2005) embodies two modifications of the standard-Jones model and modified-Jones model. First they add an intercept to the regression model, as well as an additional control for the effect of performance on accruals - the lagged rate of return on assets ($ROA_{ijP-1}$ ), as follows:

$$TA_{ijp}/A_{ijp-1} = \propto_0 + \propto_{jp} (1/A_{ijp-1}) + \beta_{1jp}(\Delta REV_{ijp}/A_{ijp-1}) + \beta_{2jp}(PPE_{ijp}/A_{ijp-1}) + \beta_{3jp}(ROA_{ijp-1}) + \varepsilon_{ijp} \qquad (3.10)$$

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[45] Kang and Sivaramakrishnan (1995) find that the Type II error is reduced when the GMM is employed compared to the OLS and IV approach.

All the discretionary accruals measures exhibit some degree of misspecification. Prior research suggests that the best specified test is the performance-matched Jones model (Kothari et al., 2005). In this study, following the "portfolio" approach, in addition to the total discretionary accruals, the working capital discretionary accruals are also used to test for earnings management in the modified-Jones model and performance-matched Jones model. The choice of using the working capital accruals along with the total discretionary accruals is motivated by its higher potential as an instrument of earnings management (Botsari and Meeks, 2008). The estimation procedure is identical to that described above. The only differences are that depreciation is not included in the definition of accruals, and property, plant and equipment are also not included in the model as an explanatory variable.

### 3.4.3  Other Approaches

Typically, prior studies on earnings management have focused on signed discretionary accruals as a proxy for earnings management to distinguish between income-increasing and income-decreasing earnings management (e.g., Healy, 1985; DeAngelo, 1986; Jones, 1991; DeFond and Jiambalvo, 1994; Dechow et al., 1995). These studies test for earnings management which is predicted to occur in a certain direction and in a particular period. However, others have also used unsigned discretionary accruals, in particular absolute value of discretionary accruals to test for overall differences in earnings quality or the general propensity to manipulate earnings (e.g., Klein, 2002; Leuz et al., 2003). In contrast, these measures of earnings management are intended to capture which firms are more likely to manipulate reported earnings in the absence of a specific direction (Hribar and Collins, 2002). Hribar and

Collins (2002) comparatively examine the consequences of these two approaches and find that models based on unsigned discretionary accruals are subject to an omitted variable problem (which is not a concern in tests using signed discretionary accruals) as the error variance in unsigned discretionary accruals is correlated with firm characteristics (such as market value of equity, total assets, sales growth, leverage and cash flow from operations). This omitted variable problem leads to an overrejection of the null hypothesis of no earnings management. As a solution for mitigating this possible bias, they suggest the use of determinants of accrual volatility as control variables in research design.

# 3.5 Measurement of Real-Activity Earnings Manipulation

Prior research has employed various models to measure real-activity earnings management, such as sales manipulation, production costs manipulation, discretionary expenses, and timing of asset sales (e.g., Roychowdhury, 2006; Cohen and Zarowin, 2010; Zang, 2011). This section presents in detail the proxies used to estimate each type of real-activity earnings management, as well as different approaches used in the literature to investigate earnings manipulation via real-activities.

## 3.5.1 Sales Manipulation

A potential method of real activity manipulation is the acceleration of the timing of sales through increased price discounts or more lenient credit terms. Both price discounts and more lenient credit terms will temporarily lead to an increase in sales

volumes, but a lower cash flow in the current period. However, the additional sales will result in increased current earnings if the profit margins are positive.

The proxy used in prior literature to measure sales manipulation is the discretionary (abnormal) cash flows from operations (CFO). The model developed by Dechow et al. (1998) and implemented in Roychowdhury (2006) and Cohen and Zarowin (2010) estimates the normal level of cash-flows from operations (*NCFO*) as a linear function of sales and change in sales,[46] as follows:

$$NCFO_{it}/A_{it-1} = k_0 + k_{1jt}(1/A_{it-1}) + k_{2jt}SALES_{it}/A_{it-1} + k_{3jt}\Delta SALES_{it}/A_{it-1} +$$

$$+\varepsilon_{it} \tag{3.11}$$

Where:

$NCFO_{it}$ = normal cash flows from operations for firm $i$ in event year $t$;

$A_{it-1}$ = beginning of period total assets for firm $i$ in event year $t$;

$SALES_{it}$ = contemporaneous sales for firm $i$ in event year $t$;

$\Delta SALES_{it}$ = contemporaneous change in sales for firm $i$ in event year $t$;

$\varepsilon_{it}$ = error term for firm $i$ in event year $t$.

Abnormal CFO is calculated as the difference between actual CFO and the normal level of CFO estimated using the cross-sectional estimated coefficients from equation (3.11). Given sales levels, firms that engage in income-increasing earnings management are likely to have unusually low cash flows from operations. However,

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[46]Following Roychowdhury (2006), an unscaled intercept, $k_0$, is included into the model to allow the average $NCFO_{it}/A_{it-1}$ for a certain industry grouping and year to be non-zero when the explanatory variables, sales and sales change, in the model are zero.

abnormal CFO is not a valid proxy when the firms engage in more than one real activity earnings management as the effect on CFO is ambiguous (Gunny, 2010).[47]

## 3.5.2 Production Costs Manipulation

Another potential method of real-activity earnings management is the reduction of COGS through increased production. Managers can increase production more than necessary in order to increase earnings. Thus, they produce more units and the fixed overheads are spread over a larger number of units which leads to a lower fixed cost per unit. If the reduction in fixed costs per unit is not offset by any increase in marginal cost per unit, the total cost per unit declines and will result in a decreased cost of goods sold. Therefore, managers can report higher earnings in the current period.

In the prior literature on real-activity earnings management, discretionary production costs is the proxy of production costs manipulation and is defined as the sum of COGS and change in inventory over the year (Gunny, 2010).[48] Thus, the normal level of production costs (NCOGS), as in the model developed by Dechow et al. (1998) and implemented in Roychowdhury (2006) and Cohen and Zarowin (2010), is a linear function of sales and contemporaneous sales:

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[47] As Gunny (2010) mentions, for example, the reduction of discretionary expenses will lead to unusually high CFO if these expenses are normally paid in cash, while overproduction to decrease COGS will lead to abnormally low CFO, so the overall effect on CFO might be positive or negative relative to the reported earnings.

[48] Abnormal real activities may or may not have effects on accruals and the partial effects on accruals of each real-activity earnings management method are positive (Roychowdhury, 2004). As Gunny (2010) points out, the production costs metric is used instead of COGS expense to mitigate the confounding effect of accruals earnings management. For example, using COGS as a real-activity earnings management proxy in case of a write-down of an obsolete inventory can lead to an unusually low COGS and a misclassification of accruals earnings management as real-activity earnings management. By using production costs (COGS + inventory change), the write-down of obsolete inventory will not affect production costs as the increased change in inventory would offset the lower COGS. Similarly, the other real-activity earnings management metrics, abnormal CFO and discretionary expenses should be free of the effects of pure accrual manipulation (Roychowdhury, 2004).

$$NCOGS_{it}/A_{it-1} = k_0 + k_{1jt}(1/A_{it-1}) + k_{2jt}SALES_{it}/A_{it-1} + \varepsilon_{it} \qquad (3.12)$$

The normal inventory costs are expressed as a linear function of the contemporaneous and lagged change in sales:

$$\Delta INV_{it}/A_{it-1} = k_0 + k_{1jt}(1/A_{it-1}) + k_{2jt}\Delta SALES_{it}/A_{it-1} + k_{3jt}\Delta SALES_{it-1}/$$

$$A_{it-1} + \varepsilon_{it} \qquad (3.13)$$

Using (3.12) and (3.13), the normal level of production costs (NPROD) can be estimated as follows:

$$NPROD_{it}/A_{it-1} = k_0 + k_{1jt}(1/A_{it-1}) + k_{2jt}SALES_{it}/A_{it-1} + k_{3jt}\Delta SALES_{it}/$$

$$A_{it-1} + \Delta SALES_{it-1}/A_{it-1} + \varepsilon_{it} \qquad (3.14)$$

Where:
$NCOGS_{it}$= normal level of costs of goods sold for firm *i* in event year *t;*
$\Delta INV_{it}$= change in inventory for firm *i* in event year *t;*
$NPROD_{it}$=normal level of production costs (sum of COGS and the change in inventory) for firm *i* in event year *t;*
$\Delta SALES_{it-1}$= lagged change in sales for firm *i*.

Like other metrics of real-activity earnings management, abnormal production costs are calculated as the difference between actual production costs and its normal level, NPROD, estimated cross-sectionally from equation (3.14). Unusually high abnormal production costs are indicative of real activity earnings management.

### 3.5.3 Discretionary Expenses Manipulation

The reduction in discretionary expenses, such as advertising, R&D and SG&A, can be subject to managers' discretion, and therefore another potential method of real-activity manipulation. An opportunistic reduction in advertising, R&D and SG&A expenses leads to higher reported earnings and cash flow from operations. There are two distinct streams of literature that examine the occurrence of earnings manipulation through real activities.

The first approach focuses on each technique of earning management based on the reduction of discretionary expenses, such as R&D spending cuts (e.g., Baber et al., 1991; Dechow and Sloan, 1991; Bushee, 1998; Cheng, 2004). In this line of research, Gunny (2010) develops an expectations model for the normal level of R&D expenses, as follows:

$$RD_t/A_{it-1} = \alpha_0 + \alpha_1(1/A_{it-1}) + \beta_1 MV_t + \beta_2 Q_t + \beta_3 INT_t/A_{it-1} + \beta_4 RD_{t-1}/A_{it-1} + \varepsilon_t^{RD} \tag{3.15}$$

Where:

$RD$ = R&D expenditure;

$A$ = total assets;

$MV$ = the natural logarithm of market value;

$Q$ = Tobin's Q [MVE+Book value of preferred stock+Long-term debt+Short-term debt)/Total assets];

$INT$ = internal funds [(Income before extraordinary items+Research and development expenses+Depreciation and amortisation)/Total assets].

Equation (3.15) is estimated by year and industry and the independent variables are used to control for factors that influence R&D expenditure. More recent research also focuses on R&D as a proxy for real-activity earnings management (Roychowdhury et al., 2012). Roychowdhury et al. (2012) develop a fixed-effects autoregressive panel data model adjusted from firm-specific and time-period-specific effects to estimate abnormal R&D expenses, as follows:

$$R\&D_{it} = \propto_{rd\,i} + \beta_{rd} * R\&D_{it-1} + \gamma_{sales} * Sales_{it-1} + \sum_{\tau=1}^{T} \vartheta_{\tau} * Time(\tau) + \varepsilon_{rd\,it}$$

$$(3.16)$$

Where:

$R\&D_{it}$ = the value of the size-adjusted R&D (R&D intensity) series to be modelled for firm i at time period t;

$R\&D_{it-1}$ = the lagged value of the size-adjusted R&D series for firm i;

$Sales_{it-1}$ = the lagged value of the size-adjusted Sales series for firm i;

$Time(\tau)$ = indicator variable that is equal to 1 if year is $\tau$ and 0 otherwise;

$\vartheta_{\tau}$ = the economy-wide mean of the R&D series in a given year $\tau$;

$\propto_{rd\,i}$ = the firm-specific constant;

$\beta_{rd}$ = the first-order autoregressive coefficient.

Equation (3.16) shows that the R&D series depends on the value of R&D in the previous period, the level of sales in the previous period and the economy-wide mean of the series in a given year ($\vartheta_{\tau}$). The coefficient $\propto_{rd\,i}$ is the firm-specific level which captures the individual fixed-effects and $\beta_{rd}$ is the first-autoregressive coefficient depicting the persistence of R&D series. Compared to cross-sectional estimation, the main advantage of this panel data fixed-effects estimation technique is that it allows for data from beyond the M&A event to be incorporated in the measurement of earnings management at the time of the deal. When cross-sectional estimation is deployed there may not be enough data available at the time of the deal to detect real-activities that are

departures from the firm's normal operations. In addition, this estimation technique corrects for any model misspecification issues that would improperly classify firms exhibiting unusually high (or low) R&D due to their business environment and/or their nature. These factors are likely to induce significant autocorrelation especially in the proxies of real-activity earnings management. Unlike cross-sectional OLS regression models where the firm fixed-effect is incorporated in the forecast error, this proxy for abnormal R&D does not include this firm fixed-effect. Therefore, the conclusions based on the model are biased towards not finding support in favour of the earnings management hypothesis.

The second approach used to investigate earnings manipulation via discretionary expenses estimates the overall sum of discretionary expenses (advertising, R&D and SG&A expenses). The normal level of discretionary expenses can be modelled as a function of current sales as in Dechow et al. (1998) (and implemented by Roychowdhury (2006) and Cohen and Zarowin (2010)), however this creates a mechanical problem.[49] To address this issue, discretionary accruals are expressed as a function of lagged sales, as follows:

$$NDISX_{it}/A_{it-1} = k_0 + k_{1jt}(1/A_{it-1}) + k_{2jt}SALES_{it-1}/A_{it-1} + \varepsilon_{it} \qquad (3.17)$$

Where:

$NDIX_{it}$ = normal level of discretionary expenses (the sum of advertising, R&D and SG&A) for firm $i$ in event year $t$;

$SALES_{it-1}$ = lagged sales for firm i.

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[49] There is an extremely high correlation between sales and discretionary expenses, therefore the residuals resulting from a model which expresses discretionary expenses as a function of current sales would be significantly low (Cohen and Zarowin, 2010).

Equation (3.17) is estimated using cross-sectional regression analysis for each industry and year. The abnormal cash-flows, abnormal production costs and abnormal discretionary expenses are calculated as the difference between the actual values and the normal level predicted from these equations. Given the sales levels, firms that manipulate earnings upward are likely to have unusually low discretionary expenses or unusually low abnormal R&D expenses.

## 3.5.4  Timing of Asset Sales Manipulation

Managers can manipulate reported earnings through the timing of sales of long-lived assets and investments by taking advantage of the unrecognised gains/losses associated with these assets. Based on Bartov (1993) and Herrmann et al. (2003), Gunny (2010) develops an expectations model for the normal level of gain on asset sales, as follows:

$$GainA_t/A_{it-1} = \alpha_0 + \alpha_1(1/A_{it-1}) + \beta_1 MV_t + \beta_2 Q_t + \beta_3 INT_t/A_{it-1} +$$

$$+ \beta_4 ASALES_t/A_{it-1} + \beta_4 ISALES_t/A_{it-1} + \varepsilon_t^{Asset} \qquad (3.18)$$

Where:

$GainA$ = income from asset sales;

$A$ = total assets;

$MV$ = the natural logarithm of market value;

$Q$ = Tobin's Q;

$INT$ = internal funds;

$ASales$ = long-lived assets sale;

$ISales$ = long-lived investment sales.

Equation (3.18) is estimated by year and industry, and residuals represent the abnormal level of gain on asset sales which is a proxy used in the literature to examine real-activity earnings management. Thus, high residuals (abnormal gain on asset sales) are indicative of asset sale manipulation.

## 3.6 Consequences of Earnings Management Behaviour

The effects of earnings management behaviour represent another important issue which has been extensively examined in the literature. Most of prior research focuses on the impact of accruals earnings manipulation and how this method affects subsequent operating performance or stock price (e.g., Sloan, 1996; Subramanyam, 1996; Rangan, 1998; Teoh et al., 1998a; Shivakumar, 2000; Xie, 2001; Hribar and Collins, 2002; DuCharme et al., 2004).

Depending on the research context, there are two main approaches to investigate the consequences of earnings management in the literature: 1) by examining the relationship between earnings manipulation (via either accruals and/or real activities) and subsequent stock price and operating performance in M&A settings, and 2) by investigating the overpricing/mispricing of abnormal accruals in a general context. Using the first approach, numerous studies examine whether managers choose positive abnormal accruals to opportunistically increase reported earnings in M&A settings and whether market participants identify and react to accruals earnings management. For example, Teoh et al. (1998b) provide evidence that managers engage in accruals manipulation before initial public offerings (IPO) and seasoned equity offering (SEO) and firms with high discretionary accruals exhibit poor stock performance in the subsequent years.

Rangan (1998) also documents temporary overvaluation of SEO firms caused by earnings management and finds that these firms experience poor stock price and earnings performance after the reversal of discretionary accruals subsequent to the offerings. DuCharme et al. (2004) report a similar finding that abnormal accruals around IPO are negatively related to post-offer stock returns and abnormal accruals tend to decline after stock offers. However, other studies question this relationship and explain the stock price reaction to the deal announcement as anomalies due to methodology (e.g., Fama, 1998), flawed models for estimating discretionary accruals (e.g., Hribar and Collins, 2002) or a rational response to anticipated market behaviour (e.g., Shivakumar, 2000).

Only a few empirical studies address the issue of the extent to which various techniques of real-activity earnings management affect subsequent operating and stock price performance. By definition, real-activity manipulation has a negative impact on firms' future performance as managers who engage in earnings management sacrifice future cash flows for additional current earnings. Survey data by Graham et al. (2005) suggests that CFOs are aware of the negative effects of real-activity earnings management, but they are willing to engage in real-activity earnings management and "burn" cash flows to meet their earnings targets "as long as the real sacrifices are not too large". Consistent with Graham et al. (2005), Gunny (2005) provides empirical evidence that all real-activity earnings management techniques (sales manipulation, production costs manipulation, reduction in discretionary expenses and timing of asset sales) have a negative impact on future operating performance (measured by earnings and cash flows) and that financial analysts recognise the implications of real-activities. However, there is no clear evidence that investors incorporate the future effects of all real-activity manipulation tactics into stock prices.

Cohen and Zarowin (2010) and Roychowdhury et al. (2012) also examine the impact of real-activity earnings management in the SEO context. Cohen and Zarowin (2010) find that firms use both accruals earnings management and real-activity earnings management techniques around SEO and the decline in post-SEO operating performance due to real-activities is more severe than that due to accruals earnings management. In the same line of research, Roychowdhury et al. (2012) also provide evidence of simultaneous occurrence of accruals earnings management and real-activity earnings management around SEO years and more importantly their results suggest that real-activity manipulation has more severe consequences in the long-run, in particular post-SEO stock under-performance is more closely related and predictably linked to real-activity earnings management.

The mispricing of abnormal accruals is another well-researched issue in the earnings management literature. Sloan (1996) investigates the mispricing of total accruals and finds that investors "fixate" on earnings, stock prices fail to fully incorporate information contained in the accruals component of earnings, and consequently the market overprices accruals. Subramanyam (1996) focuses on the relationship between opportunistic accruals manipulation and overpricing and provides evidence that discretionary accruals are positively associated with future profitability, which suggests that the stock market prices these accruals and is functionally fixated on earnings. Extending Sloan (1996) and Subramanyam (1996), Xie (2001) argues that the market not only prices discretionary accruals stemming from managerial discretion, but also overprices them. Xie (2001)'s evidence shows that the overpricing of abnormal accruals occurs in more general settings, and is not limited to IPO or SEO. Chi and Gupta (2009) also investigate the consequences of accruals manipulation and find that income-increasing earnings management is negatively associated with future abnormal stock performance and operating performance.

To sum up, the negative association between the abnormal accruals and post-M&A operating performance and stock returns, as well as the mispricing of abnormal accruals in more general settings appear to be a general empirical regularity in the prior literature. Moreover, there is also clear evidence that, real-activity earnings management has severe negative consequences on operating and stock price performance subsequent to IPO and SEO.

## 3.7 Conclusions

This chapter presents the literature on the definitions and strategies of earnings management, as well as the methodology employed to examine earnings management. As the definitions of earnings management and empirical evidence point out, the most-widely used techniques of earnings management are accruals and real-activity earnings management. While accruals earnings management results from changing the accounting policy, altering the accounting estimates and timing of revenue and expense recognition to mislead investors as to whether earnings management is done in accordance with accounting standards, real-activity earnings management involves departures from normal business operational practices. It is achieved by changing the timing and structuring of an operation, investment and financing transactions have serious suboptimal business consequences (e.g., Zang, 2011; Roychowdhury et al., 2012). Recent research provides evidence that firms use multiple earnings management strategies based on accruals and real-activities simultaneously or sequentially, and more importantly, at times of heightened scrutiny such as M&A, managers' propensity to engage in real-activity manipulation in SEO years is higher than propensity for accruals earnings management due to its greater opacity (Roychowdhury et al., 2012).

Unlike the measurement of real-activity earnings management which is new and still under development (e.g., Roychowdhury, 2006; Gunny, 2010; Roychowdhury et al., 2012), empirical accruals models have received more attention from researchers and have improved significantly in the literature (e.g., Jones, 1991; Dechow et al., 1995; Kothari et al., 2005). There is no consensus about which is the best accrual model to use for testing the accruals earnings management hypothesis, however, the majority of prior studies have employed the cross-sectional modified Jones model (Dechow et al., 1995) and the performance-matched approach (Kothari et al., 2005) to measure accruals earnings management.

In terms of real-activity earnings management, most empirical studies have used models developed by Dechow et al. (1998) and implemented in Roychowdhury (2006) and Cohen and Zarowin (2010). More recently, Roychowdhury et al. (2012) has developed a more refined measure of discretionary R&D expenditure based on fixed-effects regression estimation, which compared to the cross-sectional approach mitigates the survivorship bias and corrects for any model misspecification errors.

Furthermore, prior research provides clear evidence suggesting a negative association between abnormal accruals and post-M&A operating performance and stock returns, as well as mispricing of abnormal accruals (e.g., Rangan, 1998; Teoh et al., 1998b; DuCharme et al., 2004). Further recent research documents that real-activity methods have serious long-term consequences on future operating and stock price performance (e.g., Cohen and Zarowin, 2010; Gunny, 2010; Roychowdhury et al., 2012), however, there is no clear evidence that investors incorporate the future effects of real-activity manipulation into stock prices.

The next chapter presents the data and pooled sample used in the three empirical studies, as well as the research methodology employed to examine the accruals and real-activity earnings management.

# Chapter 4  Data and Research Methods

## 4.1 Introduction

The previous chapter reviews the earnings management literature, in particular the definitions and strategies of earnings management and presents the measurement of both accruals and real-activity earnings manipulation. Furthermore, it also discusses the consequences of earnings management behaviour. This chapter presents the data and the pooled UK targets sample used in the empirical analysis in Chapter 5, 6 and 7, the estimation of accruals and real-activity earnings management measures and the control sample used for the cross-sectional estimation of discretionary accruals (all UK publicly listed companies excluding the sample firms which had experienced a takeover event). This thesis examines UK targets involved in completed M&A during the period 1990-2008.

This chapter is organized as follows: section two provides the sample selection process in detail and the databases used to obtain data for the empirical analyses. Section three presents descriptive statistics for the pooled sample. The accruals and real-

activity earnings management estimation methodology and the control sample are described and discussed in section four of this chapter. Finally, section five concludes.

## 4.2 Sample Selection Process

The pooled UK target sample used in this thesis is a subset of the population of UK domestic mergers and acquisitions announced between 1 January, 1990 and 31 December, 2008, inclusively. This period was selected as the necessary accounting data are available on the Datastream (DS)/Worldscope (WS) database starting in 1988.[50]

The initial sample of 3173 UK mergers & acquisitions was obtained using the deal-specific information provided by the Thomson One Banker Mergers & Acquisitions database. This source was chosen as it provides the most comprehensive listing of UK deals, while offering the necessary deal-specific information, such as transaction date, deal value, premium, type of consideration and other details of transactions. The initial sample contains only UK targets in order to ensure data consistency, such as common disclosure requirements and accounting standards. No restriction was applied on the type of consideration in order to secure an as broad as possible sample of mergers and acquisitions within the UK.[51]

More specifically, a transaction is included in the initial sample of 3173 if it satisfies the following three criteria:

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[50] Worldscope/Datastream data extend back to 1980, but its coverage is much more extensive from 1987 onwards (Alves et al., 2007). The study period ends in 2008, which was the beginning of the global financial crisis, as this external shock had a significant effect on both the M&A activity, and firm's value and stock price performance. If the financial crisis period was included in the study period of this thesis, the results of the earnings management analysis may have suffered from a serious measurement bias.

[51] It is reasonable to assume that the motive for earnings management should exist in all mergers and acquisitions regardless of the consideration received by targets' shareholders, therefore cash, stock-for-stock and mixed transactions were included within the sample.

(1)  All the deals are mergers and acquisitions.[52]

(2)  The deal was announced between 1 January, 1990 and 31 December, 2008.

(3)  The target company at the time of acquisition was an UK public company.

The final sample was obtained after a further complex sample selection process. Figure 4.1 in Appendix A presents the whole sample selection process and the several restrictions imposed on the initial sample. Following prior studies (e.g., Rossi and Volpin, 2004; Bertrand and Zitouna, 2008; Botsari and Meeks, 2008; Liu et al., 2009; Braga-Alves et al., 2010; Raman et al., 2013), a company is defined in the sample as a target if the percentage owned by the acquirer before the deal was less than 50% and after the acquisition was higher than 50%. Therefore, 911 were deleted, which resulted in a sample of 2262 deals where the percentage owned after the acquisition was equal to or higher than 50%. There were 1024 successful mergers and acquisitions identified within the sample.[53] The remaining 1238 uncompleted deals were cross-checked with the Fame/Zephyr database,[54] another 41 of these were identified as completed deals and added back to the sample. Thus, 1197 deals were deleted. As a result of the previous selection criteria, a subset of 1065 completed mergers and acquisitions was selected to be used in the study.

Next, the listing status of targets in this sample was checked and 940 publicly listed targets involved in completed mergers and acquisitions were identified. An additional 25 publicly listed targets were found using alternative sources of information. The main sources of information used to manually collect data regarding the listing status of 66 target firms were the Datastream/Worldscope and Fame/Zephyr databases.

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[52] All the transactions classified as mergers and acquisitions according to the Thomson One Banker Mergers & Acquisitions database.

[53] According to the Thomson One Banker Mergers & Acquisitions database, all the transactions are classified in terms of the status of transaction as completed, rumoured, intended, pending, unconditional, withdrawn and unknown status.

[54] The Fame/Zephyr database also provides a comprehensive listing of UK deals, offering not only deal-specific but detailed accounting information (including listing status information) on public and private firms in the UK and Ireland. However, its coverage is only from 2001 onwards.

Therefore, a further 100 were deleted, leaving a sample of 965 UK publicly listed targets. The sample was restricted to UK publicly listed targets as the empirical analyses require financial statement data for the targets, which is obtained from the Datastream/Worldscope database, as well as the Fame and Thomson One Banker databases. There were 51 special mergers and acquisitions, such as financial acquirer, acquirer is a white knight, liquidation deals and bankruptcy acquisitions, identified in the sample. This further selection led to a reduced sample of 914 deals. A further 183 special deals, such as restructuring, three-way merger, collar, reverse takeover, scheme of arrangement, divestiture and privately-negotiated purchase were deleted from the sample. Therefore, the remaining sample consisted of 731 deals. All 731 deals are classified as Tender Offer/Tender Merger transactions by the Thomson One Banker M&A database.[55]

Furthermore, of the 731 targets involved only in Tender Offer/Tender Merger deals, an additional 112 financials (SIC Codes 60-69) were excluded from the previous sample. Only non-financial targets were selected as the accrual process of financial companies is different than that of industrial firms, and comparability could not be ensured if they were kept within the sample. In addition, financial companies face more disclosure requirements as they are closely regulated, so their ability to manage earnings is lower than that of non-financial companies (Louis, 2004). After using these selection criteria, the remaining sample consisted of 619 non-financial targets.

A further selection criterion used to obtain the final sample was the location of the stock exchange where the target's shares had been traded. Of the 619 targets, 27

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[55] According to the Thomson One Banker M&A database, a Tender Offer is defined as a formal offer of determined duration to acquire a public company's shares made to equity holders; the offer is often conditioned upon certain requirements, such as a minimum number of shares being tendered. Tender/Merger is the case where a tender offer is launched to acquire control of a company, and the offer is followed by a merger agreement in which the acquirer agrees to purchase the remaining shares not tendered under offer.

cross-listing and non-London Stock-Exchange (LSE) targets were identified. Therefore, a further 27 were deleted, which resulted in a sample of 592 LSE targets.

Financial information for each target in the sample was obtained from the Datastream/Worldscope database. To obtain the Datastream/Worldscope codes necessary to get financial information for the 433 targets in the sample, the Thomson One Banker M&A database was searched. After this, there were 159 targets with unavailable Datastream/Worldscope codes in the sample. The Datastream/Worldscope data were then crossed-checked with the LSE website, the Nexis/Lexis academic database[56] and the Thomson One Banker, and the Datastream/Worldscope codes for an additional 40 targets with unavailable codes on the Thomson One Banker M&A database were found. Of the 592 targets, only 473 have identifiable Datastream/Worldscope codes. Therefore, a further 119 targets were deleted, leaving a sample of 473 targets for which financial information could potentially be obtained from the Datastream/Worldscope database.

The Datastream/Worldscope database was used to obtain financial information for each firm in the sample of 473 targets involved in mergers and acquisitions between 1990 and 2008, inclusive. The financial statement data for a minimum two consecutive years could not be obtained for 57 targets, which were therefore excluded, leaving 416 targets in the sample.

After a thorough analysis of the financial data for the 416 targets, 22 companies with abnormal financial statement figures, such as zero cash and sales[57] were identified. Therefore, a further 22 were deleted which resulted in a sample of 394 targets. To estimate discretionary accruals, the financial statement data for at least 4 consecutive

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[56] The Nexis/Lexis academic database contains company profiles and identifying codes, M&A news and LSE announcements on UK companies.
[57] A company with zero cash and sales is considered to be a shelf or shell company in the literature, therefore if they were kept in the sample, their extremely low level of operational activity would have lead to biased accruals results.

years prior to the deal were necessary. Of the 394 targets, 98 companies with a financial history lower than 4 years were identified. After excluding these 98 companies, there were 296 targets left in the sample.

Next, outliers in raw data on all variables used to calculate accruals were eliminated by trimming the sample at 1% and 99%. Therefore, a further 6 companies with extreme values were deleted, which resulted in a sample of 290 targets. Finally, of the 290 companies, 33 targets which were listed on the Alternative Investment Market (AIM) were identified in the sample, and were therefore deleted. This further selection led to a reduced sample of 257 targets. After using this final selection criterion, the remaining sample consisted of 257 targets, which are UK publicly listed companies and whose shares had been traded on LSE Main market.

In summary of the whole sample selection process, a transaction is included in the final sample of 257 mergers and acquisitions if it meets the following criteria:

1)  All the deals are mergers and acquisitions.

2)  The deal was announced between 1 January, 1990 and 31 December, 2008.

3)  The target at the time of the acquisition was a UK public company.

4)  The deal was completed and the percentage of the target's shares owned by the acquirer before the deal was less than 50% and after the acquisition was higher than 50%.

5)  The deal was not a special type of mergers and acquisitions, such as financial acquirer, acquirer is a white knight, liquidation deals and bankruptcy acquisition.

6)  The deal was classified as a Tender Offer/Tender Merger transaction by the Thomson One Banker M&A database.

7)  The target is a non-financial company.

8)  The target is (was at the time of the acquisition) not a cross-listing and non-London Stock-Exchange (LSE) company.

9) The target company has identifiable Datastream/Worldscope codes.

10) The target has the necessary Datastream/Worldscope data to estimate discretionary accruals (annual reports in GBP), has no missing financial data and has financial statement data available for at least four consecutive years prior to the deal as well.

11) The target does not have zero cash and/or sales.

12) There are no outliers among the sample companies (undertaken trimming at 1% and 99%).

13) The target is an UK publicly listed company, whose shares had been traded on LSE Main market.

Therefore, the final sample consists of 257 target companies involved in completed deals that satisfy all the sample selection criteria. The initial sample identified and the final sample used for the empirical analysis are not identical. The significant reduction in the sample size is primarily due to the missing identifiable Datastream/Worldscope codes necessary to get financial data, as well as due to missing annual financial data for UK publicly listed companies on Datastream/Worldscope. Other comparable studies on earnings management in M&A also had a small sample of acquirers or targets. Note however, that compared to prior studies, the size of this sample (257 targets) is relatively larger than theirs. For example, Easterwood (1997) have a final sample of 110 companies, Eddey and Taylor (1999) 48 companies, and Botsari and Meeks (2008) 42 companies.

## 4.3 Descriptive Statistics

Table 4.1 and Table 4.2 present the descriptive statistics of key variables for the pooled UK targets sample. Table 4.1 presents the distribution of targets per industry.

Following Cohen and Zarowin (2010), 17 industry groupings were formed based on 2-digit SIC codes to estimate cross-sectionally discretionary accruals. The results reported in Table 4.1 indicate that the deals in the sample are spread across a variety of industries, with the greatest concentration of firms in Computer Equipment and Services (43 firms or 16.73%) and All Others (49 firms or 19.07%), respectively. Table 4.2, which presents the distribution of deals per year, shows that a larger number of deals occurred over the period 1995-2000, which is consistent with prior studies in the UK (e.g., Botsari and Meeks, 2008).

**Table 4.1 Distribution by Target Industry (Two-digit SIC Codes)**

| Group Name | Two-digit SIC | Freq. | % |
|---|---|---|---|
| Oil and gas | 13, 29 | 6 | 2.33 |
| Food products | 20 | 10 | 3.89 |
| Paper and paper products | 24, 25, 26,27 | 16 | 6.23 |
| Chemical products | 28 | 14 | 5.45 |
| Manufacturing | 30-34 | 27 | 10.51 |
| Computer equipment and services | 35,73 | 43 | 16.73 |
| Electronic equipment | 36 | 13 | 5.06 |
| Transportation | 37,39,40-42,44,45 | 15 | 5.84 |
| Scientific instruments | 38 | 7 | 2.72 |
| Communications | 48 | 8 | 3.11 |
| Electric, gas and sanitary services | 49 | 13 | 5.06 |
| Durable goods | 50 | 13 | 5.06 |
| Retail | 53,54,56,57,59 | 10 | 3.89 |
| Eating and drinking establishments | 58 | 3 | 1.17 |
| Entertainment services | 70,78,79 | 9 | 3.5 |
| Health | 80 | 1 | 0.39 |
| All others | 10,12,14,15,16,17 | 49 | 19.07 |
|  | 21,22,23,47 |  |  |
|  | 51,52,55,72,75,76 |  |  |
|  | 82,83,84,87,89,92,95 |  |  |
| **Total** |  | **257** | **100** |

**Table 4.2 Distribution by Year**

| Year | No. of Deals | Deal Value (£m) |
|---|---|---|
| 1991 | 2 | 93.00 |
| 1992 | 4 | 128.32 |
| 1993 | 3 | 97.59 |
| 1994 | 15 | 2,188.64 |
| 1995 | 18 | 17,849.85 |
| 1996 | 15 | 11,577.94 |
| 1997 | 26 | 6,610.75 |
| 1998 | 32 | 7,386.10 |
| 1999 | 36 | 15,052.90 |
| 2000 | 36 | 19,520.49 |
| 2001 | 11 | 2,043.38 |
| 2002 | 6 | 366.35 |
| 2003 | 8 | 1,996.87 |
| 2004 | 4 | 313.77 |
| 2005 | 14 | 8,678.23 |
| 2006 | 13 | 8,146.98 |
| 2007 | 7 | 1,329.13 |
| 2008 | 7 | 2,562.06 |
| **Total** | **257** | **105,942.35** |

## 4.4 Cross-Sectional Estimation of Accruals and Control Sample, and Panel Data Estimation of Real-Activity Earnings Management

This section discusses in depth the cross-sectional estimation procedure employed to estimate discretionary accruals in the thesis. Then it presents the control sample used in the cross-sectional regression analysis to test the research hypotheses related to the accruals earnings management. Finally, the panel data estimation approach used to measure the abnormal R&D expenditure as a proxy for real-activity earnings management is discussed in this section.

## 4.4.1  Cross-Sectional Estimation of Accruals and Control Sample

Following recent literature on earnings management in M&A (e.g., Louis, 2004; Ball and Shivakumar, 2008; Botsari and Meeks, 2008; Cohen and Zarowin, 2010; Roychowdhury et al., 2012), two cross-sectional variations of the Jones approach (1991) are adopted in the empirical studies namely: the modified-Jones model (Dechow et al., 1995) and the performance-matched Jones model (Kothari et al., 2005). Both these models, along with other widely-used accruals models, were presented in depth in *Chapter 3 Definitions, Strategies, Measurement and Consequences of Earnings Management*, where the methodology used to measure accruals earnings management is reviewed. In order to reduce heteroscedasticity in the data, all variables in the accruals models are scaled by beginning of period assets.[58] In addition, the lagged return on assets ($ROA_{it-1}$) is included in the performance-matched Jones model proposed by Kothari et al. (2005) to control for extreme performance. All variables are trimmed at 1% and 99% to mitigate influential observations.

The accurate identification of dates in a takeover deal relative to the reporting periods is crucial in the research design of this thesis. Any deal normally follows three steps: negotiating the terms of the transaction, reaching an agreement and completing the deal. Similar to other deal-specific information, the data on the news announcements in the press were obtained from the Thomson One Banker M&A database and are defined as announcement date, agreement date and completion date

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[58] The heteroscedasticity problem is reduced by deflation, but it is not completely eliminated. Therefore, an intercept is added to the estimation of non-discretionary accruals to mitigate the heteroscedasticity problem and problems generated by an omitted size variable, and to better address the issues related to the power of the tests (Kothari et al., 2005).

respectively. The research question in this thesis is whether targets manage earnings in the periods with an earnings release preceding the announcement of a takeover. To maximize the benefits from earnings management, the targets should manipulate reported earnings in the periods prior to the announcement date of a takeover, particularly the most recent three years before the deal announcement date. Given the fact that targets are likely to become aware of being a potential target or pro-actively putting themselves on the market, such an incentive to manipulate earnings is expected to persist for up to a three-year period before the deal announcement date. The earnings release date is the date that the annual report (including the financial statements) is published and made available to the public. Therefore, abnormal accruals are estimated for event years -2, -1, and 0: that is, the three years preceding a takeover, which are most likely to affect stock price performance. Year 0 (-1 and -2) is defined as the first (second and third) year[59] with an earnings release preceding the announcement of the deal.

Abnormal accruals are computed as the difference between the actual accruals and the normal component of accruals i.e. estimated non-discretionary accruals. More specifically, following the literature, the normal level of accruals for each industry grouping/year portfolio, based on two-digit SIC code as in Cohen and Zarowin (2010), with at least 6 observations[60] are estimated by using a control sample (e.g., DeFond and Jiambalvo, 1994; Subramanyam, 1996; Botsari and Meeks, 2008). The control sample consists of all UK publicly listed firms (active and dead) that have the necessary data to estimate accruals on Datastream/Worldscope, excluding the sample firms which had

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[59] This represents the fiscal year end which in the UK differs significantly among companies. Furthermore, there is a difference in the period between the fiscal year end and the announcement date among targets from the sample which may introduce noise in the empirical analysis and be considered a limitation of the empirical studies in this thesis.

[60] The cut-off number used within cross-sectional analysis varies significantly in the literature: a minimum of 6 observations (e.g., DeFond and Jiambalvo, 1994; Subramanyam, 1996; Botsari and Meeks, 2008), 10 observations (e.g., Kothari et al., 2005), 15 observations (e.g., Zang, 2011) and 20 observations (e.g., Raman et al., 2013).

experienced a takeover event. Furthermore, all industry grouping/year portfolios with less than 6 observations are excluded from the control sample. This criterion results in 323 industry grouping/year portfolios with more than 6 observations, with 306 out of 323 portfolios having more than 10 observations. Table 4.3 presents the distribution per industry grouping and year for the control sample (all UK publicly listed firms - active and dead) which is used to estimate discretionary accruals in this thesis.

For example, when the performance-matched Jones model (Kothari et al., 2005) is employed, the normal total accruals are estimated by using the following equation:

$$TA_{ijp}/A_{ijp-1} = \propto_0 + \propto_{jp} (1/A_{ijp-1}) + \beta_{1jp}(\Delta REV_{ijp}/A_{ijp-1}) + \beta_{2jp}(PPE_{ijp}/A_{ijp-1}) + \beta_{3jp}(ROA_{ijp-1}) + \varepsilon_{ijp} \tag{4.1}$$

Where:

$TA_{ijp}$ = total accruals for estimation portfolio $j$ for firm $i$ in event year $p$;

$\Delta REV_{ijp}$ = change in revenues for estimation portfolio $j$ for firm $i$ in event year $p$;

$PPE_{ijp}$ = gross property, plant, and equipment for estimation portfolio $j$ for firm $i$ in event year $p$;

$A_{ijp-1}$ = beginning of period assets for estimation portfolio $j$ for firm $i$ in event year $p$;

$\varepsilon_{ijp}$ = error term for estimation portfolio $j$ for firm $i$ in event year $p$;

$i = 1,...., N$ firm index;

**Table 4.3 Industry Grouping/Year Portfolios for the Control Sample**

| Year | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | Total |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-------|
| All others | 195 | 202 | 208 | 210 | 213 | 197 | 192 | 186 | 193 | 179 | 173 | 182 | 183 | 200 | 206 | 201 | 202 | 195 | 177 | **3694** |
| Chemical products | 38 | 42 | 43 | 44 | 44 | 42 | 44 | 43 | 43 | 41 | 41 | 43 | 51 | 50 | 49 | 49 | 45 | 42 | 37 | **831** |
| Communications | 10 | 10 | 11 | 12 | 14 | 14 | 14 | 17 | 21 | 22 | 23 | 27 | 22 | 26 | 25 | 29 | 29 | 28 | 25 | **379** |
| Computer equipment and services | 118 | 129 | 131 | 135 | 141 | 138 | 146 | 144 | 180 | 179 | 200 | 210 | 234 | 254 | 257 | 252 | 253 | 232 | 214 | **3547** |
| Durable goods | 47 | 52 | 50 | 50 | 52 | 52 | 48 | 48 | 49 | 42 | 37 | 38 | 36 | 35 | 35 | 33 | 33 | 28 | 22 | **787** |
| Eating and drinking establishments | 12 | 18 | 19 | 19 | 21 | 21 | 22 | 24 | 29 | 30 | 30 | 31 | 31 | 30 | 29 | 28 | 26 | 25 | 24 | **469** |
| Electric equipment | 25 | 30 | 25 | 26 | 26 | 25 | 26 | 21 | 22 | 22 | 22 | 20 | 20 | 18 | 20 | 22 | 24 | 22 | 21 | **437** |
| Electronic equipment | 41 | 41 | 40 | 45 | 43 | 44 | 43 | 40 | 42 | 41 | 40 | 43 | 41 | 45 | 47 | 51 | 51 | 50 | 44 | **832** |
| Entertainment services | 31 | 33 | 34 | 32 | 29 | 29 | 30 | 35 | 46 | 52 | 55 | 62 | 66 | 67 | 64 | 59 | 55 | 49 | 44 | **872** |
| Food products | 37 | 43 | 42 | 43 | 44 | 43 | 40 | 37 | 39 | 33 | 31 | 33 | 31 | 31 | 29 | 24 | 26 | 23 | 23 | **652** |
| Health | 6 | 6 | 7 | 7 | 7 | 7 | 7 | 6 | 8 | 8 | 9 | 9 | 11 | 10 | 8 | 8 | 8 | 7 | 7 | **146** |
| Manufacturing | 91 | 96 | 95 | 93 | 97 | 96 | 90 | 86 | 87 | 76 | 61 | 55 | 47 | 44 | 44 | 45 | 44 | 40 | 37 | **1324** |
| Oil and gas | 10 | 10 | 12 | 15 | 15 | 17 | 15 | 15 | 17 | 16 | 19 | 21 | 21 | 30 | 31 | 30 | 34 | 33 | 32 | **393** |
| Paper and paper products | 53 | 59 | 58 | 61 | 59 | 58 | 53 | 46 | 50 | 48 | 43 | 47 | 52 | 52 | 52 | 51 | 46 | 45 | 36 | **969** |
| Retail | 54 | 60 | 61 | 63 | 63 | 65 | 65 | 64 | 68 | 64 | 64 | 70 | 64 | 61 | 60 | 54 | 50 | 46 | 43 | **1139** |
| Scientific instruments | 24 | 26 | 26 | 26 | 25 | 27 | 27 | 26 | 32 | 32 | 31 | 35 | 34 | 40 | 41 | 43 | 39 | 38 | 35 | **607** |
| Transportation | 52 | 54 | 53 | 54 | 59 | 59 | 58 | 56 | 57 | 58 | 62 | 62 | 61 | 60 | 59 | 53 | 49 | 49 | 48 | **1063** |
| **Total** | **844** | **911** | **915** | **935** | **952** | **934** | **920** | **894** | **983** | **943** | **941** | **988** | **1005** | **1053** | **1056** | **1032** | **1014** | **952** | **869** | **18141** |

$j = 1,...., J$ estimation portfolio index;

$p = 1,...., P$ year index (for years included in the event period).

In addition to the total discretionary accruals, the working capital discretionary accruals (WCA) are also used to test for earnings management using the modified-Jones model (Dechow et al., 1995) and the performance-matched Jones model (Kothari et al., 2005). The choice of using the working capital accruals along with the total discretionary accruals is motivated by its higher potential as an instrument of earnings management (e.g., Botsari and Meeks, 2008). The estimation procedure for the working capital accruals is almost identical to that described above. The only differences are that depreciation is not included in the definition of accruals, and property, plant and equipment are not included in the model as an explanatory variable.

When the modified-Jones model (Dechow et al., 1995) is used, the normal working capital accruals are estimated by using the following equation:

$$WCA_{ijp}/A_{ijp-1} = \propto_0 + \propto_{jp} (1/A_{ijp-1}) + \beta_{1jp}(\Delta REV_{ijp}/A_{ijp-1} - \Delta REC_{ijp}/A_{ijp-1}) + \varepsilon_{ijp} \tag{4.2}$$

Where:

$WCA_{ijp}$= working capital accruals for estimation portfolio *j* for firm *i* in event year *p*.

Similarly, when the performance-matched Jones model (Kothari et al., 2005) is employed to estimate the normal working accruals the following equation is used:

$$WCA_{ijp}/A_{ijp-1} = \propto_0 + \propto_{jp} (1/A_{ijp-1}) + \beta_{1jp}(\Delta REV_{ijp}/A_{ijp-1}) + \beta_{2jp}(ROA_{ijp-1}) + \varepsilon_{ijp} \tag{4.3}$$

Total accruals or working capital accruals in equations are calculated using both the balance sheet and cash flow approach. Following Botsari and Meeks (2008), under the balance sheet approach, the total accruals are defined as the change in non-cash current assets, less the change in current liabilities, excluding the current portion of long-term debt, less depreciation; the working capital accruals are the change in non-cash current assets minus the change in current liabilities. Under the cash flow approach, the total accruals are the difference between income before extraordinary items and discontinued operations, and cash from operations; the working capital accruals are defined are the difference between net income before extraordinary items (as reported in the cash flow statement) and operating cash flow (excluding depreciation).

In the second stage of the cross-sectional estimation of accruals, the industry grouping/event year parameter estimates ($\hat{\alpha}_{jp}$, $\hat{\beta}_{1jp}$, $\hat{\beta}_{2jp}$ and $\hat{\beta}_{3jp}$) from equation (4.1) are subsequently combined with firm-specific data to generate estimated prediction errors that represent the level of abnormal total accruals for each firm:

$$EDTA_{ijp}/A_{ijp-1} = TA_{ijp}/A_{ijp-1} - [\alpha_0 + \alpha_{jp}(1/A_{ijp-1}) + \beta_{1jp}(\Delta REV_{ijp}/A_{ijp-1}) + \beta_{2jp}(PPE_{ijp}/A_{ijp-1}) + \beta_{3jp}(ROA_{ijp-1} + \varepsilon_{ijp})] \qquad (4.4)$$

Where:
$EDTA_{ip}$ = estimated discretionary total accruals for firm *i* in event year *p*.

Similarly, the level of abnormal working capital accruals for each firm under the the modified-Jones model (Dechow et al., 1995) is estimated by using the industry grouping/event year parameter estimates from equation (4.2) which are subsequently combined with firm-specific data to generate estimated prediction errors:

$$EDWCA_{ijp}/A_{ijp-1} = WCA_{ijp}/A_{ijp-1} - [\propto_0 + \propto_{jp}(1/A_{ijp-1}) + \beta_{1jp}(\Delta REV_{ijp}/A_{ijp-1} - \Delta REC_{ijp}/A_{ijp-1})]$$

$$(4.5)$$

Where:

$EDWCA_{ip}$ = estimated discretionary working capital accruals for firm *i* in event year *p*.

This approach controls for changes in economic conditions that affect total accruals across different industry groupings, but allows for coefficients to vary over time (e.g., DeFond and Jiambalvo, 1994; Cohen and Zarowin, 2010). In this thesis, as a robustness test, the empirical analysis is repeated by using a measure based on the performance-matched abnormal accruals as advanced in Kothari et al. (2005). As suggested by Kothari et al. (2005), to estimate this additional measure of discretionary accruals first each M&A firm-year observation is matched with a non-M&A firm-year observation from the same industry grouping based on 2-digit SIC code and year with the closest value of lagged return on assets (+/-20% of sample firm's return on assets). Then, discretionary accruals for both an M&A firm and a non-M&A firm are computed. Finally, the discretionary accruals for an M&A firm are adjusted by the discretionary accruals for its matched firm.

In addition, to test the validity of the results, the accrual tests are re-run by deploying median regression models in this thesis. Median or quantile regression is used as it is more robust to outliers than Ordinary Least Squares (OLS) regression and avoids assumptions about parametric distribution of regression errors, which makes median regression appropriate for heteroscedastic data (Cameron and Trivedi, 2009).

## 4.4.2 The Panel Data Estimation of Real-Activity Earnings Management

Prior research has used various proxies for real-activity earnings management, such as sales manipulation, production costs manipulation, advertising, R&D and SG&A expenses, and timing of asset sales, primarily using cross-sectional OLS regression models developed by Dechow et al. (1998) and implemented in Roychowdhury (2006) and Cohen and Zarowin (2010). However, more recent research focuses on R&D expenses as a proxy for real-activity earnings management and develops a fixed-effects panel data model adjusted for firm-specific and time-period-specific effects to estimate abnormal R&D expenses (Roychowdhury et al., 2012).

Following Roychowdhury et al. (2012), this thesis also focuses on abnormal R&D expenses as a proxy for real-activity earnings management and employs their fixed-effects autoregressive panel data model to estimate real-activity earnings management:

$$R\&D_{it} = \propto_{rd\ i} + \beta_{rd} * R\&D_{it-1} + \gamma_{sales} * Sales_{it-1} + \sum_{\tau=1}^{T} \vartheta_{\tau} * Time(\tau) + \varepsilon_{rd\ it} \quad (4.6)$$

Where:

$R\&D_{it}$ = the value of the size-adjusted R&D (R&D intensity) series to be modelled for firm i at time period t;

$R\&D_{it-1}$ = the lagged value of the size-adjusted R&D series for firm i;

$Sales_{it-1}$ = the lagged value of the size-adjusted Sales series for firm i;

$Time(\tau)$ = indicator variable that is equal to 1 if year is $\tau$ and 0 otherwise;

$\vartheta_{\tau}$ = the economy-wide mean of the R&D series in a given year $\tau$;

$\propto_{rd\ i}$ = the firm-specific constant;

$\beta_{rd}$ = the first-order autoregressive coefficient.

Equation (4.6) shows that the R&D series depends on the value of R&D in the previous period, the level of sales in the previous period and the economy-wide mean of the series in a given year ($\vartheta_{\tau}$). The coefficient $\propto_{rd\ i}$ is the firm-specific level which captures the individual fixed-effects, and $\beta_{rd}$ is the first-autoregressive coefficient depicting the persistence of R&D series. The fixed-effects estimation is used to estimate the autoregressive coefficient $\beta_{rd}$ and lagged sales coefficient $\gamma_{sales}$ in the presence of fixed-effects $\propto_{rd\ i}$.

Compared to cross-sectional OLS estimation, the main advantage of this panel data fixed-effects estimation technique is that it allows for data from beyond the M&A event to be incorporated in the measurement of earnings management at the time of the deal. When the cross-sectional estimation is deployed there may not be enough data available at the time of the deal to detect real-activities that are departures from the firm's normal operations. In addition, this estimation technique corrects for any model misspecification issues that would improperly classify firms exhibiting unusually high (or low) R&D expenses due to their business environment and/or their nature. These factors are likely to induce significant autocorrelation especially in the proxies of real-activity earnings management. Unlike cross-sectional OLS regression models where the firm fixed-effect is incorporated in the forecast error, this proxy for abnormal R&D does not include the firm fixed-effect. Therefore, the conclusion based on the model is biased towards not finding support in favour of the earnings management hypothesis.

## 4.5 Conclusion

This chapter presents in-depth the sources of the data and sample selection process followed to construct the pooled UK targets sample which is used to test the accruals and real-activity earnings management in the empirical studies of this thesis. The control sample (all UK publicly listed companies) and the research methodology employed for cross-sectional estimation of accruals, and the panel data estimation of measures of real-activity earning management are presented in this chapter.

The next chapter is the first empirical study in this thesis. It examines whether UK publicly listed targets attempt to manipulate earnings prior to the announcement of M&A and investigates the relationship between deal premium and the targets' abnormal accruals.

## Appendix A

### Figure 4.1 Sample Selection Procedure

Using TOB M&A database and selecting:
- M&A deals
- 01.01.1990-31.12.2008
- Target Nation: UK
- Acquirer and Target Public Status: Public

Initial Sample
=3173 Deals

Analyzing and verifying data

>= 50% of target shares acquired or no info?

NO → 911 Deals

YES

2262 Deals

Analyzing and verifying data

Completed deals?

NO → 1238 Deals → Found and collecting data manually for 41

YES

1024+41=1065 Deals

Analyzing and verifying data

Publicly listed Targets?

NO → 125 Deals → Found and collecting data manually for 25

YES

940+25=965 Deals

```
                        ┌─────────────────────────────┐
                        │  Analyzing and verifying data │
                        └─────────────────────────────┘
                                      │
                                      ▼
                    ╱╲
                   ╱    ╲
        No Financial Acquirer?
        Acquirer is not a White
                Knight?                        NO      ┌──────────────┐
          No Bankruptcy          ─────────────────────▶│   51 Deals   │
          acquisition?                                 └──────────────┘
          No Liquidation?
                   ╲    ╱
                    ╲  ╱
                     ▼  YES
              ┌──────────────┐
              │  914 Deals   │
              └──────────────┘
                     │
                     ▼
        ┌─────────────────────────────┐
        │  Analyzing and verifying data │
        └─────────────────────────────┘
                     │
                     ▼
                   ╱╲
                  ╱    ╲
        Tender Offer and/or                  NO      ┌──────────────┐
        Tender/Merger?       ──────────────────────▶ │  183 Deals   │
                  ╲    ╱                              └──────────────┘
                   ╲  ╱
                    ▼  YES
              ┌──────────────┐
              │  731 Deals   │
              └──────────────┘
                     │
                     ▼
        ┌─────────────────────────────┐
        │  Analyzing and verifying data │
        └─────────────────────────────┘
                     │
                     ▼
                   ╱╲
                  ╱    ╲
        Non-financial                         NO      ┌──────────────┐
        Targets ?        ──────────────────────────▶ │  112 Deals   │
                  ╲    ╱
                   ╲  ╱
                    ▼  YES
              ┌──────────────┐
              │  619 Deals   │
              └──────────────┘
                     │
                     ▼
        ┌─────────────────────────────┐
        │  Analyzing and verifying data │
        └─────────────────────────────┘
                     │
                     ▼
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**\*DS=Datastream; WS=Worldscope.**

# Chapter 5  Accruals Earnings Management and Deal Premium in the UK

## 5.1 Introduction

The previous chapter provides a detailed description of the pooled UK target sample and the research methodology employed to test the earnings management hypotheses in the empirical studies of the thesis. This chapter examines empirically the accruals earnings management behaviour of UK targets and investigates the relationship between deal premium and the targets' abnormal accruals.

Mergers and acquisitions are important corporate events for both acquirers and targets. As the quality of public accounting information has a crucial role in making M&A decisions (e.g., Anilowski et al., 2009; McNichols and Stubben, 2009; Raman et al., 2013), researchers have dedicated much effort to examining whether acquirers and targets undertake earnings manipulation around takeovers. Prior evidence of earnings management by targets in takeovers has been provided by a small number of mostly US studies (e.g., Easterwood, 1997; Erickson and Wang, 1999) and the results are mixed (Easterwood, 1997; Shen, 2005). More recent literature examines the impact of targets' earnings quality on decisions during the M&A process, and finds that if earnings

manipulation by targets is detected, acquirers take into account the targets' earnings quality and adapt their takeover strategies by adjusting downward the deal price (e.g., Anilowski et al., 2009; Raman et al., 2013).

The objective of this chapter is first to examine whether UK publicly listed targets attempt to manipulate earnings prior to being acquired. Secondly, it investigates the relationship between deal premium and the earnings management behaviour of targets. This chapter contributes to the exiting literature by providing evidence that earnings management by UK targets is not a widespread practice in M&A. Furthermore, the analysis of targets with positive abnormal accruals shows that the deal premium and abnormal accruals for these firms are negatively related, and so acquirers pay less for companies where there are higher levels of accruals earnings management. This suggests that there may, therefore, be a strong disincentive for targets to manage earnings prior to a deal.

The reminder of the chapter is as follows: section two presents the research background and develops hypotheses. Section three discusses data and the research methods. Section four reports the empirical results, and section five concludes.

## 5.2 Literature Review and Hypothesis Development

This section reviews the literature on accruals earnings management by targets and presents the evidence provided by prior empirical studies. Then the main findings of the prior research that has examined the relationship between accruals earnings management and deal premium will be presented in detail.

## 5.2.1 Earnings Management by Targets and Empirical Evidence

The information asymmetry between acquirers and targets in M&A can be mitigated by corporate financial disclosure. Indeed, the importance of accounting earnings in equity valuation creates incentives for targets to manipulate earnings in an attempt to influence short-term stock performance prior to mergers and acquisitions (Shleifer and Vishny, 2003). Targets' managers, acting in the shareholders' interests, may be motivated to manage reported earnings upward prior to a takeover to increase the deal premium for shareholders. There is strong evidence that targets' shareholders make substantial gains in takeovers in the form of a deal premium (e.g., Moeller et al., 2004; Antoniou et al., 2008).

Moreover, targets' managers may agree to merge for personal reasons (retirement or illiquid stock ownership) and have, therefore, clear incentives to manipulate reported earnings. A target may also have incentives to manage earnings upward prior to a takeover in response to earnings manipulation by the acquirer. Under the takeover defence hypothesis (Easterwood, 1997), if the acquirer overstates prior earnings, then the target can anticipate the degree of earnings manipulation and adjust its reported earnings in order to gain a higher deal premium from the acquirer (Erickson and Wang, 1999; Louis, 2004).

Although the benefits of earnings management in takeovers are potentially significant, the constraints and costs associated with targets' accruals manipulation are also potentially high. One obstacle to opportunistic earnings management behaviour by targets is that they are subject to scrutiny by auditors, regulators and the acquirers'

financial advisors, as well as being exposed to potential litigation if high levels of earnings management are detected (e.g., Graham et al., 2005; Zang, 2011).

Moreover, the cost of detection of any earnings manipulation or fraud before a takeover or during due diligence could result in a significant loss of credibility among investors and in the market for corporate control. One consequence of this would be a lower deal value and premium offered by the acquirer, or in extreme circumstances, the cancellation of the transaction. The target may, therefore, choose not to manipulate earnings upward prior to a takeover due to the damage that any detected earnings management could do to the deal and the reputation of the firms' managers.

The evidence on earnings management by targets is mixed, and based mainly on US studies. While Easterwood (1997) and Erickson and Wang (1999) find that the abnormal accruals of targets in hostile takeovers and stock-for-stock deals, respectively, are positive during pre-merger periods, they are not always statistically significant. Eddey and Taylor (1999) provide little evidence that earnings management is used to support target directors' recommendations on bids within Australia.

More recently, Anilowski et al. (2009) provide evidence of income-increasing earnings management in targets acquired via auction (defined as a deal with multiple bidders) as opposed to negotiation. In contrast, Shen (2005) finds that soliciting targets [61] make income-decreasing accruals choices to 'clean-up' their financial statements before a takeover in order to prove that they are credible targets. Consistent with Shen (2005), Anagnostopoulou and Tsekrekos (2012) examine US "seeking buyer" firms and find that these specific targets engage in income-decreasing accruals earnings management up to two years prior to the event and also in the event year. The authors

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[61] In Shen (2005), soliciting targets are defined as the targets that publicly announce their intent to solicit takeover offers. His findings suggest that soliciting targets have incentives to adopt income-decreasing accounting practices prior to a takeover as they face higher costs of detection. Consequently the soliciting targets are more likely to "clean-up" their financial statements before putting themselves up for sale.

argue that this "big bath" behaviour of "seeking buyer" firms would allow them to make a fresh start by cleansing financial statements before a deal, which leads to an increased probability of securing an acquisition. In a cross-country comparative study, Anagnostopoulou and Tsekrekos (2013) find that the evidence of income-decreasing earnings management previously reported in the US also holds for the UK and Italy, but not for other European countries. Furthermore, they document significant positive abnormal returns for UK "seeking buyer" firms.

The mixed findings of prior empirical studies show that opportunistic earnings management is not a common practice among US targets. The UK market for corporate control provides an alternative setting in which targets are likely to face similar benefits and costs to manipulate reported earnings prior to M&A. While some empirical studies identify various corporate governance–related differences between the US and the UK (e.g., Coffee, 2005), others provide empirical evidence of the numerous similarities between these markets, such as similar legal and institutional environments, large developed stock markets, dispersed corporate ownership and strong investor rights (e.g., La Porta et al., 1997; López de Silanes et al., 1999). More importantly, recent research argues that the incidence of earnings management in these two countries should be similar (e.g., Leuz et al., 2003).

Given the mixed evidence of earnings management by targets presented above, in this chapter there is no prediction about the occurrence and direction of earnings management by UK targets in takeovers, therefore the first hypothesis is as follows:

**H1:** On average, UK publicly listed targets do not engage in accruals earnings manipulation prior to a takeover.

## 5.2.2 Relation between Accruals Earnings Management and Deal Premium

Recent research on earnings management investigates how targets' earnings quality affects M&A transactions (e.g., Anilowski et al., 2009; Marquardt and Zur, 2010; Raman et al., 2013). The findings suggest that acquirers in deals involving targets with poor earnings quality are more likely to prefer negotiated deals, pay with equity and, more importantly, to offer lower premium for these targets. Overall, this research finds that the targets' earnings quality impacts important decisions during the M&A process; in particular, if earnings manipulation by a target exists and is detected by the acquirer, the acquirer adapts their takeover strategy by adjusting the offer price and deal premium down. Thus, the second hypothesis is:

**H2:** The deal premium is inversely related to the abnormal accruals of UK targets.

This study, therefore, investigates the hypothesis that if targets engage in income-increasing accruals manipulation and this earnings management is detected by acquirers, they pay a lower premium for targets with a high level of abnormal accruals. To test this hypothesis, the analysis focuses only on UK targets with positive abnormal accruals. If targets have managed reported earnings i.e. they have a high level of positive abnormal accruals, and this manipulation is detected by acquirers, then acquirers should adjust down the premium paid for the targets. In contrast, acquirers have no incentives to take action when there is no earnings management or negative abnormal accruals are detected. A negative relationship between discretionary accruals and deal premium is

expected to be found, and therefore, deal premium may act as a constraint on earnings management by targets.

## 5.3 Data and Research Methodology

This section first presents the selection process of the sample used in this empirical chapter and the sources of information used to obtained the data necessary for this research. Furthermore, this section also discusses the main research methods and regression models used to estimate discretionary accruals and test the association between earnings management and deal premium.

### 5.3.1  Data and Sample Construction

The sample consists of 257 UK targets involved in completed deals during the period 1990-2008. These targets are publicly listed companies and whose shares had been traded on the LSE Main market. Following prior studies (e.g., Rossi and Volpin, 2004; Bertrand and Zitouna, 2008; Botsari and Meeks, 2008; Liu et al., 2009; Braga-Alves et al., 2010; Raman et al., 2013), a company is defined in the sample as a target if the percentage owned by the acquirer before the deal was less than 50% and after the acquisition was higher than 50%. The whole process of the sample selection was presented in detail in *Chapter 4 Data and Research Methods*. Table 5.1 reconciles the initial and final samples.

Following the literature, the normal level of accruals is estimated for each industry grouping/year portfolio with at least 6 observations, based on the two-digit

SIC code as in Cohen and Zarowin (2010), by using a control sample (e.g., DeFond and Jiambalvo, 1994; Subramanyam, 1996; Botsari and Meeks, 2008). The control sample consists of all UK publicly listed firms (active and dead) that have the necessary data on Datastream/Worldscope to estimate accruals, excluding the sample firms which had experienced a takeover event. Furthermore, all industry grouping/year portfolios with less than 6 observations are excluded from the control sample. This criterion results in 323 industry grouping/year portfolios with more than 6 observations, 306 out of 323 portfolios have more than 10 observations.

Data are collected using the following sources: (1) the Thomson One Banker M&A database was used to identify all the completed deals during 1990-2008 as this database provides the most comprehensive listing of UK deals. Therefore, deal-specific data, such as transaction date, deal premium and value, type of consideration and other details of transactions, were obtained from the Thomson One Banker M&A database. In addition, the Fame/Zephyr database was also used to obtain deal-specific data, such as deal status and completion date; (2) data regarding the listing status were obtained from the Datastream/Worldscope and Fame/Zephyr database; (3) the Thomson One Banker M&A and Datastream/Worldscope databases were used to obtain information about company identifier (such as ISIN code) for the sample targets. The data obtained from these databases were crossed-checked with the LSE website and the Nexis/Lexis academic database; and, (4) financial data for the sample targets and control companies were collected using the Datastream/Worldscope database.

**Table 5.1 Sample Construction - 257 UK-listed Targets Involved in Mergers and Acquisitions between 1 January, 1990 and 31 December, 2008**

|  | No. of Firms |
|---|---|
| Total number of target firms from Thomson One Banker M&A | 3173 |
| Less bidders seeking to achieve less than 50% stake | 911 |
| Less incomplete deals | 1197 |
| Less non publicly listed firms | 100 |
| Less special transactions | 51 |
| Less other special transactions (non-tender offer and/or tender/merger) | 183 |
| Less financial firms | 112 |
| Less cross-listed and non LSE listed firms | 27 |
| Less firms with missing Worldscope/Datastream firm identifier | 119 |
| Less firms with a complete financial history shorter than two years | 57 |
| Less firms with beginning total assets and sales lower than £ 1 mil. and cash less than zero | 22 |
| Less firms with missing earnings management data (less than a four-year financial history) | 98 |
| Less firms lost after trimming at 1% and 99% | 6 |
| Less AIM firms | 33 |
| **Total firms for target sample** | **257** |

The financial targets (SIC Codes 60-69) were excluded from the sample as the accrual process of financial companies is different than that of industrial ones and they face more disclosure requirements as they are closely regulated, so their ability to manage earnings is lower than that of non-financial companies (e.g., Louis, 2004).

To test the second research hypothesis of this study, the analysis next focuses only on a subsample of UK targets with positive abnormal accruals. In addition, following the literature (e.g., Officer, 2003; Raman et al., 2013) firms with extremely low and high values of premium (premium value in excess of 200% and less than or equal to 0%) were excluded from the sample of 257. After using these two criteria, in particular deleting the targets with negative abnormal accruals and targets with extremely low and high values of deal premium, there were 100 UK targets with positive abnormal accruals in this subsample. However, the actual subsample used within the empirical analysis

consists of 94 or 88 targets which differs from the subsample of 100 targets due to missing data on control variables, as well as accruals measures.

Table 5.2 presents descriptive statistics for the key variables used in this chapter. These results show that targets have an average market capitalisation of £294 million, but this figure is skewed by a few large targets as the median market capitalisation for the sample is £85.92 million. The average target is also profitable, having a positive Earnings Before Interest and Tax (*EBIT*) and Return on Assets (*ROA*) on average (£26.57 million and 8.56%, respectively). The targets have also, an average Market-to-Book Ratio of -0.44, however, the median value of Market-to-Book Ratio of 1.81 suggests that the market still expects them to grow fast.

The correlations between target's size, Sales Growth Ratio, Market-to-Book Ratio and Return on Equity were checked and the results are presented in table 5.3.[62] The results show that most of the pair-wise correlations among these variables are near +/-0.30. However, the correlation between Market-to-Book Ratio and Return on Equity of 0.6679 is higher which may suggest that multicolliniarity can be an estimation problem.[63] Therefore certain diagnostics tests for multicolliniarity, such as variance-inflation-factor (VIF) and condition index (CI), were performed within this study. The results of these tests clearly indicate that multicolliniarity is not a serious problem for the regression analysis.[64]

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[62] All these variables are used as control factors in the regression analysis discussed in detail in the next subsection. Their definitions are also presented in table 5.3 and within the next subsection.

[63] If multicolliniarity among explanatory variables is very high the coefficient estimators will still be unbiased and consistent, and their standard errors will be correctly estimated (BLUE). However, the main consequence of near high multicollinearity is that coefficients have large variances and covariances, and wrong sign, which makes precise estimation difficult (Gujarati, 2003; Greene, 2012). One of the methods of multicolliniarity detection suggested by prior econometrics literature is examination of partial correlations among explanatory variables. Despite the usefulness of a study of partial correlations, Gujarati (2003) argues that pair-wise correlations do not provide an infallible guide to multicolliniarity and suggests additional tests for detection of multicolliniarity.

[64] The value of VIF for these two variables is lower than 2 (as a rule of thumb, if the VIF exceeds 10, the variable is said to be highly correlated), which suggests that they are not highly correlated with other variables. In addition, the CI is 10.1324 which also suggests that there is only moderate colliniarity (as a rule of thumb if the CI is higher than 20 or 30 there is severe colliniarity).

**Table 5.2 Descriptive Statistics for a Sample of 257 UK-listed Target Companies Involved in Complete M&A Between 1 January, 1990 and 31 December, 2008**

| Variable | Obs | Mean | Std.Dev. | 10% | Median | 90% |
|---|---|---|---|---|---|---|
| Sales (£m) | 257 | 386.765 | 701.372 | 24.510 | 125.340 | 1081.530 |
| EBIT (£m) | 257 | 26.571 | 84.930 | -0.820 | 6.970 | 101.770 |
| Assets (£m) | 257 | 339.885 | 640.539 | 19.990 | 94.420 | 955.600 |
| Market Capitalisation (£m) | 255 | 294.001 | 595.595 | 11.980 | 85.920 | 760.220 |
| Sales Growth Ratio (%) | 257 | 108.596 | 23.278 | 88.510 | 106.079 | 128.352 |
| Return on Assets (%) | 257 | 8.564 | 12.021 | -2.204 | 9.691 | 20.799 |
| Return on Equity (%) | 257 | 23.648 | 40.744 | -3.716 | 20.802 | 50.527 |
| Market-to-Book Ratio | 255 | -0.438 | 41.513 | 0.736 | 1.805 | 5.116 |
| Relative size | 234 | 0.656 | 1.941 | 0.011 | 0.217 | 1.319 |
| Deal value (£m) | 256 | 413.837 | 878.920 | 15.200 | 97.535 | 1123.850 |
| 4-week Premium (%) | 257 | 39.626 | 43.042 | 0.000 | 37.390 | 82.540 |

**Notes:** Sales, EBIT, assets and market capitalisation are the target's net sales, earnings before interest and tax, total assets and market capitalisation the year before the deal is announced (Year 0). The corresponding Worldscope items are WC01001, WC18191, WC02999, and WC08001 respectively. Sales Growth Ratio is computed as percentage change in sales at Year 0. Return on Assets is computed as Earnings Before Interest and Tax (WC18191) at Year 0 over the average of opening and closing Total Assets (WC02999). Return on Equity is computed as Net Income (WC18191) at Year 0 over the average of opening and closing Equity (WC03501) Market-to-Book Ratio is defined as the market value of common equity of the target (WC08001) over the book value of common equity (WC03501) the year before the merger/acquisition announcement (Year 0). Relative size captures the size of the target relative to the acquirer and is defined as the ratio of the target's assets to the acquirer's assets the year before the deal announcement. Deal value is the total consideration paid for the target as reported in Thomson One Banker M&A. Four-week premium is the percentage of the closing price of the target four weeks before the announcement as reported in Thomson One Banker M&A.

**Table 5.3 Correlation Matrix for Explanatory Variables**

| | *ab_wcacc_pmcf* | *SIZE* | *SGROW* | *MBR* | *ROE* | *Per_stock* |
|---|---|---|---|---|---|---|
| **ab_wcacc_pmcf** | 1.0000 | | | | | |
| *SIZE* | -0.1634 | 1.0000 | | | | |
| *SGROW* | 0.0036 | 0.0270 | 1.0000 | | | |
| *MBR* | 0.0115 | 0.2809 | 0.0810 | 1.0000 | | |
| *ROE* | -0.0771 | 0.2166 | -0.0142 | 0.6679 | 1.0000 | |
| *Per_stock* | -0.0615 | -0.0110 | -0.1253 | -0.0014 | -0.1341 | 1.0000 |

**Notes:** *ab_wcacc_pmcf* is the abnormal working capital accruals estimated using the cross-sectional performance-matched Jones Model under the cash-flow approach at Year 0. *SIZE* represents the natural log of market capitalisation at Year 0 and *SGROW* is Sales Growth Ratio computed as percentage change in sales at Year 0. Market-to-Book Ratio is defined as the market value of common equity of the target over the book value of common equity at Year 0. Return on Equity is computed as Net Income at Year 0 over the average of opening and closing Equity the year before the merger/acquisition announcement (Year 0). *Per_stock* is defined as percentage of takeover proceeds paid using equity.

The analysis is repeated for the second discretionary accruals measure used in the empirical analysis (*PM_DA*) and the results are qualitatively the same.

The results presented in table 5.2 also reveal that comparing the size of the targets relative to the size of the acquirers, the average relative size is 0.66, which is consistent with the results reported in Botsari and Meeks (2008). The average (median) Thomson One Banker M&A premium for the sample is 39.626% (37.39%) respectively which, not surprisingly, is very close to the average (median) of 42.02% (37.90%) for UK M&A during 1990-2007 (Alexandridis et al., 2010), but it is slightly lower than the average (median) acquisition premium of 52.9% (45.9%) reported in prior US studies (e.g., Raman et al., 2013).[65] Use of a four-week deal premium as a proxy for gains the targets' shareholders receive from a transaction is common in the literature (e.g., Anilowski et al., 2009; Alexandridis et al., 2010). According to Thomson One Banker M&A database that provides information about this variable, the four-week deal premium is defined as the percentage by which the offer price exceeded the closing price of the target four weeks before the announcement. As the name suggests, this measure captures the premium offered at the takeover announcement as the offer price is compared with the pre-offer stock price four weeks before the deal. One month allows for adequate time to avoid information leakage (Kesner et al., 1994) and is short enough to avoid contamination of the measurement of takeover premium caused by other events unconnected to the acquisition (Flanagan and O'Shaughnessy, 2003).

Table 5.4 presents the distribution of the targets by various deal-specific characteristics.

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[65] The average and median deal premium values are reported after winsorising values beyond the range [0,2] as in Alexandridis et al. (2010).

**Table 5.4 Distribution by Deal-Specific Characteristics**

|  | No. of Firms | % |
|---|---|---|
| **Total firms for target sample** | **257** | **100** |
| | | |
| *Consideration Structure* | | |
| Cash deals | 131 | 50.97 |
| Mixed deals | 71 | 27.63 |
| Stock-for-stock deals | 40 | 15.56 |
| Unknown deals | 15 | 5.84 |
| | | |
| *Deal Type* | | |
| Industry-related deals | 121 | 47.08 |
| No Industry-related deals | 136 | 52.92 |
| | | |
| *Takeover Method* | | |
| Negotiated deals | 237 | 92.22 |
| Non-negotiated deals | 20 | 7.78 |
| | | |
| *Deal strategy* | | |
| Auction | 234 | 91.05 |
| Non-auction | 23 | 8.95 |

**Notes:** Based on the data on percentage of cash and stock proceeds, a cash deal is a transaction in which the only consideration offered is cash; stock-for-stock deals are defined as transactions in which the only consideration is a form of stock; a mixed deal is a transaction in which one of the considerations offered is one of either cash, stock and earnout or assumption of liabilities; an unknown deal is a transaction where there is no information available regarding the consideration offered; an industry-related deal (also referred to as a horizontal deal as opposed to a conglomerate deal) is one where the acquirer and the target have the same two-digit SIC Code; according to the Thomson One Banker M&A classification of deal attitude, a non-negotiated takeover is one which is classified as hostile by Thomson One Banker M&A and negotiated otherwise; an auction is a transaction in which the number of bidders reported by Thomson One Banker M&A is larger than one and non-auction otherwise.

The sample structure by consideration offered in the transaction shows that in 50.97% of all deals cash is the method of payment, whereas only 15.56% of all deals are a pure stock swap. Industry-related and industry-unrelated deals are equally represented across the sample, 47.08% and 52.92% respectively. Takeover deals are predominantly negotiated, with only 7.78% of the takeovers being classified as non-negotiated. Finally, 91.05% of the deals involve multiple bidders ("auction"). These characteristics are generally consistent with those reported in prior studies (e.g., Raman et al., 2013).

## 5.3.2  Research Methodology

Various measures of earnings management used to estimate discretionary accruals and test the research hypotheses of this chapter are presented within this section. In addition, this section will also discuss in detail the regression model employed to investigate the relationship between discretionary accruals and deal premium.

### A.  Abnormal Accruals Measures of Earnings Management

In line with recent studies on earnings management in M&A (e.g., Louis, 2004; Ball and Shivakumar, 2008; Botsari and Meeks, 2008; Cohen and Zarowin, 2010), two models are adopted in this study to measure accruals earnings management.. These are namely the modified-Jones model (Dechow et al., 1995) and the performance-matched Jones model (Kothari et al., 2005)[66]. Both accruals models were discussed in detail in *Chapter 4 Data and Research Methods*.  Abnormal accruals are estimated for event years -2, -1 and 0: the three years preceding a takeover, which are most likely to affect the deal value and premium.[67]

In this chapter both measures of abnormal accruals are used to estimate accruals earnings management, specifically abnormal total accruals and abnormal working capital accruals. These two proxies are estimated using the balance sheet

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[66] The performance-matched Jones model (Kothari et al., 2005), which contains lagged return on assets in addition to the change ein revenue adjusted for the change in accounts receivables and gross property, plant and equipment, is used to control for extreme performance.

[67] All variables are trimmed at 1% and 99% to mitigate extreme observations.

approach and the cash flow approach. Given the fact that the balance sheet abnormal accruals estimates can be biased, accruals obtained from cash flow statement are also used to mitigate measurement error problems (e.g., Hribar and Collins, 2002; Ball and Shivakumar, 2008).

Total accruals and working capital accruals are defined following Botsari and Meeks (2008). Therefore, under the Balance sheet approach, total accruals are defined as the change in non-cash current assets, less the change in current liabilities, excluding the current portion of long-term debt, less depreciation; working capital accruals are defined as the change in non-cash current assets, minus the change in current liabilities. Under the Cash flow approach, total accruals are defined as the difference between income before extraordinary items and discontinued operations, and cash from operations; working capital accruals are the difference between net income before extraordinary items (as reported in the cash flow statement) and operating cash flow (excluding depreciation).

Abnormal accruals are computed as the difference between the actual accruals and the normal component of accruals i.e. estimated non-discretionary accruals. As mentioned before, following prior literature, the normal level of accruals for each two-digit SIC code industry/year portfolio with at least 6 observations is estimated using a control sample (e.g., DeFond and Jiambalvo, 1994; Subramanyam, 1996; Botsari and Meeks, 2008). The control sample consists of all UK publicly listed firms that have the necessary data on Datastream/Worldscope to estimate accruals, but excluding the sample firms which have experienced a takeover event. The industry grouping/event year parameter estimates from the equations of normal accruals are subsequently combined with firm-specific data to generate estimated prediction errors that represent the level of abnormal accruals for each firm. This approach controls for changes in economic conditions that affect total accruals across different industry groupings, but

allows for coefficients to vary over time (DeFond and Jiambalvo, 1994; Cohen and Zarowin, 2010). In order to reduce heteroscedasticity in the data, all variables in the accruals model are scaled by lagged total assets.

The results are generally similar across these two measures of abnormal accruals and across the balance sheet approach and cash flow approach. Therefore, only the results derived from the cross-sectional performance-matched Jones model (Kothari et al., 2005) under the cash flow approach are reported in this study. Based on the previous papers on earnings management in M&A cited above, this study investigates whether the average abnormal accruals are significantly positive or negative for UK targets in the three years preceding a takeover. As a robustness test, the empirical analysis is repeated by using a measure based on the performance-matched abnormal accruals as advanced in Kothari et al. (2005).[68]

## B. Deal Premium Measure

The chapter next examines the hypothesis that the deal premium is negatively related to the targets' abnormal accruals by regressing the deal premium on abnormal accruals and other control variables:

$$PREM = \beta_0 + \beta_1 ab\_wcacc\_pmcf + \beta_2 SIZE + \beta_3 SGROW + \beta_4 MBR + \beta_5 ROE + \beta_6 Per\_stock + \beta_7 AUCTION + \beta_8 NON - NEGOC + \beta_9 MW + \varepsilon_i \qquad (5.1)$$

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[68]As suggested by Kothari et al. (2005), to estimate this additional measure of discretionary accruals first each M&A firm-year observation is matched with a non-M&A firm-year observation from the same industry grouping based on 2-digit SIC code and year with the closest value of lagged return on assets (+/-20% of sample firm's return on assets). Then, discretionary accruals for both an M&A firm and a non-M&A firm are computed. Finally, the discretionary accruals for an M&A firm are adjusted by the discretionary accruals for its matched firm. The results are qualitatively similar to those reported in this chapter, but they are not tabulated here for the sake of brevity.

Where:

*PREM=* bid price as a percentage of the closing price of the target four weeks before the announcement (from Thomson One Banker M&A);

*ab_wcacc_pmcf* = abnormal working capital accruals estimated using the cross-sectional performance-matched Jones Model under the cash-flow approach.

*Controls for firm characteristics:*

*SIZE* = the natural log of market capitalisation;

*SGROW* = sales growth;

*ROE* = return on equity;

*MBR* = market-to-book ratio.

*Controls for deal characteristics:*

*Per_stock* = percentage of takeover proceeds paid using equity;

*AUCTION* = dummy variable which equals 1 if the number of bidders reported by Thomson One Banker M&A is larger than 1, and 0 otherwise;

*NON-NEGOC* = dummy variable which equals 1 if the takeover deal is classified as hostile by Thomson One Banker M&A, and negotiated otherwise.

*Time dummy:*

*MW* = merger wave dummy variable which equals 1 if the deal year falls within the "fifth" merger wave period (1993-2001), and 0 otherwise (1990-1992 and 2002-2008, respectively);

$\varepsilon_i$ = error term.

The main explanatory variable of interest is the abnormal working capital accruals from the cross-sectional performance-matched Jones Model (Kothari et al., 2005) under the cash-flow approach. Deal premium (*PREM)* is used as the dependent variable in the model as a proxy for short-run gains the targets' shareholders receive from a transaction. Specifically, this proxy is an appropriate measure of the abnormal stock return realised by the targets' shareholders in M&A and the data for the sample was obtained from the Thomson One Banker M&A database.

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Controls for targets' characteristics commonly associated with deal premium in the related literature (e.g., Raman et al., 2013), such as size, sales growth, return on equity and the market to-book ratio are included in the model. The controls for deal characteristics that the empirical and theoretical literatures have found important are also added to the model (e.g., Bargeron et al., 2008; Raman et al., 2013). The natural log of market capitalisation (SIZE) is included to control for targets' size. The sales growth (GROW) and market-to-book ratio (MBR) are included to control for growth opportunities and informational asymmetry. The ratio of return on equity (ROE) is included to proxy for a firm's profitability.

Since the impact of discretionary accruals on deal premium can differ across stock-for-stock and cash deals, *Per_stock* is included in the model to control for variation in the method of payment. As prior research finds that the relationship between deal premium and earnings quality differs across negotiated and non-negotiated deals and deals involving a single bidder and deals involving multiple bidders, as well, controls for the deal strategy and takeover method, dummy variables *NON-NEGOC* and *AUCTION* respectively, are added to the model.

As the study period crosses the "fifth" merger wave (1993-2001)[69], which is well-documented in the literature (e.g., Owen, 2006; Martynova and Renneboog, 2008), a time dummy is included in the model to control for differences in the level of merger activity over time. Regarding the change in the financial reporting environment from UK GAAP to IFRS (which occurred in 2005 when the UK like all EU listed companies adopted the new standards), an additional time dummy was included initially to the model to control for differences between pre- and post-IFRS, but the coefficient was insignificant and therefore dropped from the model. However, this may not be a serious

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[69] Chapter 2 presents an in depth overview of the M&A activity in the UK during the period 1990-2008 and its trend consisting of various merger waves.

concern within this study as accounting standards, which measure the quality of the disclosure of accounting information and reflect corporate governance, affect M&A activity, but not directly deal premium (Rossi and Volpin, 2004). Furthermore, prior research which investigates the impact of the adoption of IFRS on financial disclosure shows that the UK GAAP (pre-IFRS) was perceived to be generally high, therefore the switch to IFRS was not considered a major vector of improvement in terms of earnings quality (Jeanjean and Stolowy, 2008). Finally, all the targets in the sample are UK publicly listed, thus, no differential impact across companies is expected.

## 5.4 Empirical Results

This section first presents the results of the accruals tests performed to estimate discretionary accruals. Then the results of the regression analysis used to examine the relationship between deal premium and the targets' accruals earnings management will be discussed in detail in this section.

### 5.4.1 Results of Accrual Tests

The results of the accruals tests derived from the cross-sectional performance-matched Jones model (Kothari et al., 2005) under the cash-flow approach are presented in Table 5.5. The reported residuals measure the level of discretionary accruals as a percentage of lagged total assets.

In Year 0 (the first year with an earnings release preceding the deal announcement) the results derived from the cross-sectional performance-matched

model under the cash flow approach show that the average (median) residuals for total accruals are negative (positive), but fail to become statistically significant. Thus, both the average residual of -0.4649% and the median residual of 0.5099% indicate no evidence of earnings management by targets prior to M&A. Even under the working capital accruals measure, the results of discretionary accruals in Year 0 are also positive, but small and not statistically significant.

In Year -1 and -2 (the second and the third year with an earnings release preceding the deal announcement), the results vary from negative to positive values, not only they are not statistically significant, but also their value is very small. The results of the working capital accruals measure in these two years are quite similar to those of the total accruals. Despite the lack of evidence of earnings management by targets on average, the value of total accruals and working capital accruals for the 25th and 75th percentile reported in Table 5.5 show that some targets may use income-decreasing and income-increasing accrual manipulation prior to a takeover.

The unreported results derived from the cross-sectional modified-Jones model and under the balance sheet approach are qualitatively the same as those reported in Table 5.5; specifically, the mean and median residuals for total accruals and working capital accruals vary from slightly negative to slightly positive. However, none of the values are high and statistically significant, which indicates no evidence of systematic earnings management by UK targets. The results from both the cross-sectional modified-Jones model (Dechow et al., 1995) and cross-sectional performance-matched Jones model (Kothari et al., 2005), using both a balance-sheet approach and cash-flow approach, indicate that UK targets do not manage earnings upward through manipulation of total discretionary accruals or discretionary working capital accruals prior to a takeover.

**Table 5.5 Event Period Discretionary Accruals Derived from the Cross-Sectional Performance-Matched Jones Model**

**Panel A Total Discretionary Accruals around Takeovers**

|  | Year -2 | | Year -1 | | Year 0 | |
|---|---|---|---|---|---|---|
|  | *Estimate* | *p-value* | *Estimate* | *p-value* | *Estimate* | *p-value* |
| **Mean** | -0.0887 | (0.8925) | 0.1573 | (0.7900) | -0.4649 | (0.4880) |
| **Median** | -0.0327 | (0.8659) | 0.6922 | (0.2647) | 0.5099 | (0.9555) |
| **Sd. Dev.** | 0.1051 | | 0.0946 | | 0.1073 | |
| **Percentile 25th** | -0.0481 | | -0.0363 | | -0.0441 | |
| **Percentile 75th** | 0.0451 | | 0.0458 | | 0.0427 | |

**Panel B Working Capital Discretionary Accruals around Takeovers**

|  | Year -2 | | Year -1 | | Year 0 | |
|---|---|---|---|---|---|---|
|  | *Estimate* | *p-value* | *Estimate* | *p-value* | *Estimate* | *p-value* |
| **Mean** | -0.0048 | (0.9945) | -0.0124 | (0.9877) | 0.1047 | (0.8872) |
| **Median** | 0.6499 | (0.3780) | 0.9547 | (0.1295) | 0.3678 | (0.5392) |
| **Sd. Dev.** | 0.1121 | | 0.1287 | | 0.1182 | |
| **Percentile 25th** | -0.0441 | | -0.0415 | | -0.0514 | |
| **Percentile 75th** | 0.0580 | | 0.0652 | | 0.0581 | |

**Notes:** The results for the cross-sectional performance-matched model under the cash flow approach are based on the estimated discretionary accruals for 257 UK targets undertaking cash, stock-for-stock and mixed deals during the period 1990-2008. Significance is based on the *t*-tests for the means and on the Wilcoxon signed-ranked tests for the medians. Significant results are marked in bold and the corresponding *p*-values are given next in brackets. ***, ** and * indicate 1%, 5% and 10% level of significance, respectively. Year 0 (-1 and -2) is the first (second and third) year with an earnings release preceding the announcement of the deal.

The results also hold when the abnormal accruals measure is estimated using the median regression (instead of OLS), suggesting that it is unlikely that the results are driven by outliers. The previous conclusion from the earlier OLS regression analysis based on both cross-sectional modified-Jones model and performance-matched model under the cash flow approach and balance sheet approach – that targets do not engage in earnings management through either the manipulation of total accruals and working capital accruals is confirmed by these further tests. The findings of some positive, but insignificant discretionary accruals immediately preceding the announcement of a deal are consistent with those reported in Eddey and Taylor (1999).

## 5.4.2 Effect of Deal Premium on the Targets' Earnings Management Behaviour

To test the second hypothesis, this study next focuses on UK targets with positive abnormal accruals. Furthermore, as some firms in the sample have large deal premium values, following prior literature, observations with premium value in excess of 200% and less than or equal to 0% were deleted (Raman et al., 2013). The resulting subsample consists of 100 targets with positive abnormal accruals.[70] However, as mentioned before, the final subsample size of 94 or 88 targets used in this empirical analysis differs from the subsample of 100 targets with positive abnormal accruals and positive deal premium values due to missing data on control variables and accruals measures.

The results from the estimation of Equation (5.1) using the abnormal working capital accruals derived from the cross-sectional performance-matched Jones Model (Kothari et al., 2005) under the cash-flow approach (*ab_wcaacc_pmcf*) are reported in models (1)-(2) of Table 5.6. Consistent with the second hypothesis, this regression yields a negative and significant coefficient for the abnormal working capital accruals, which indicates that the larger the level of positive abnormal accruals observed prior to a takeover, the lower the deal premium. Among the control variables, size, sales growth, market-to-book ratio, and the merger wave dummy variable are statistically significant in both models. For example, there is a negative relationship between target's size, measured as the natural log of its market capitalisation, and deal premium which reflects

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[70] The standard errors for within-firm correlations are corrected following Rogers (1994).

that large targets earn lower premiums which is consistent with prior literature (Officer, 2003). The market-to-book ratio, which is used as a proxy for informational asymmetry, takes a positive value in both models. Alexandridis et al. (2010) argue that the negative impact of market-to-book value can be explained as a result of targets' overvaluation acquired at a relative discount. Further, a negative and significant relationship is found between deal premium and sales growth in these two models. Overall, these results suggest that deal premiums are lower for targets that are more difficult to value (larger targets with a higher sales growth rate, higher return on equity and lower market-to-book ratio), which is consistent with the findings in Raman et al. (2013).

The control variables used as proxies for deal characteristics, *Per_stock, NON-NEGOC* and *AUCTION,* are not statistically significant. However, the coefficient of *Per_stock* is negative which suggests that high equity financing is associated with low deal premium as reported in prior research (e.g., Anilowski et al., 2009; Raman et al., 2013). Furthermore, hostile deals result in higher premium and the presence of multiple bidders decreases deal premium which is consistent with prior studies (e.g., Schwert, 2000; Alexandridis et al., 2010).

For robustness, models (1) and (2) are re-estimated using an alternative discretionary accruals metric: namely the performance-matched abnormal accruals as advanced in Kothari et al. (2005). Models (3) and (4) of Table 5.6 show that these results are qualitatively similar to those reported in columns one and two, in particular discretionary accruals significantly reduces deal premium, thereby providing further support for hypothesis H2.

**Table 5.6 Deal Premium and Discretionary Working Capital Accruals Estimated Using the Cross-Sectional Performance-Matched Jones Model**

| Variables | (1) PREM | (2) PREM | (3) PREM | (4) PREM |
|---|---|---|---|---|
| *ab_wcacc_pmcf* | *-0.590\*\** | *-0.589\*\** | | |
| | *(0.251)* | *(0.252)* | | |
| *PM_DA* | | | *-0.370\** | *-0.365\** |
| | | | *(0.191)* | *(0.193)* |
| *SIZE* | -0.0470\*\* | -0.0464\* | -0.0698\*\*\* | -0.0719\*\*\* |
| | (0.0227) | (0.0263) | (0.0225) | (0.0266) |
| *SGROW* | -0.215\*\* | -0.216\*\* | -0.123 | -0.116 |
| | (0.103) | (0.107) | (0.120) | (0.129) |
| *MBR* | 0.0216\*\* | 0.0215\*\* | 0.0224\*\* | 0.0227\*\* |
| | (0.00944) | (0.00965) | (0.0101) | (0.0101) |
| *ROE* | -0.199 | -0.197 | -0.162 | -0.169 |
| | (0.128) | (0.135) | (0.128) | (0.132) |
| *Per_stock* | -0.0730 | -0.0731 | -0.0772 | -0.0767 |
| | (0.0868) | (0.0875) | (0.0874) | (0.0884) |
| *AUCTION dummy* | -0.0503 | -0.0503 | -0.0691 | -0.0693 |
| | (0.122) | (0.123) | (0.126) | (0.127) |
| *NON-NEGOC dummy* | | -0.0103 | | 0.0344 |
| | | (0.120) | | (0.115) |
| *MW dummy* | 0.176\*\* | 0.176\*\* | 0.189\*\* | 0.190\*\* |
| | (0.0715) | (0.0721) | (0.0729) | (0.0739) |
| Constant | 0.660\*\*\* | 0.658\*\*\* | 0.739\*\*\* | 0.746\*\*\* |
| | (0.112) | (0.126) | (0.121) | (0.132) |
| Observations | 94 | 94 | 88 | 88 |
| R-squared | 0.134 | 0.134 | 0.169 | 0.169 |
| Adj. R-squared | 0.0526 | 0.0414 | 0.0846 | 0.0733 |

**Notes:** This table presents OLS regression estimates for an initial subsample of 94 UK targets with positive abnormal accruals and positive deal premium. However, the actual subsample size differs from 94 to 88 targets due to missing data on accruals measures and control variables. These estimated coefficients are obtained from regressing the deal premium on the discretionary working capital accruals estimated using the cross-sectional performance-matched Jones model (*ab_wcacc_pmcf*), a measure based on the performance-matched abnormal accruals advanced in Kothari et al. (2005) (*PM_DA*), and a set of explanatory variables that control for the characteristics of the target (size, sales growth, market-to-book and return on equity) and characteristics of the takeover deal (the percentage of takeover proceeds paid using equity, deal strategy and takeover method). A time dummy is included within these four regression models to control for differences in the level of merger activity over time. The dependent variable is *PREM* in all these models. Extreme observations with premiums larger than 200% and smaller than or equal to 0% are excluded. For models (3)-(4), the sample size is slightly smaller than 100 due to missing data about the control variables included in the regression models. Robust standard errors (in parentheses) are White (1980) heteroscedasticity-adjusted and robust to within-firm correlations (Rogers, 1994)/clustered standard errors). \*\*\*, \*\*, \* indicate that the parameter estimate is significantly different from zero at the 1%, 5% or 10% level, respectively.

The results on control variables are largely consistent with those reported by previous analysis based on the discretionary accruals measure derived from the performance-matched Jones model. Targets' size is negatively related with deal premium and the premium is lower for targets with a higher level of information

asymmetry or more overvalued, however the coefficient of market-to-book ratio is not statistically significant in these models. Furthermore, targets earn a lower premium in deals with higher equity financing, hostile deals and multiple bidders.

To sum up, these results show that the deal premium and the targets' abnormal accruals are negatively related suggesting that earnings quality affects acquirers' takeover decisions regarding the deal premium.

## 5.5 Conclusions

This chapter investigates the manipulation of earnings via accruals prior to mergers and acquisitions for a sample of 257 UK publicly listed targets between 1990 and 2008. The results of the accruals tests under the cross-sectional modified-Jones model (Dechow et al., 1995) and the performance-matched Jones model (Kothari et al., 2005), using either the balance-sheet approach or the cash-flow approach, indicate that, on average UK publicly listed targets do not manage earnings upward prior to mergers and acquisitions. These results are consistent with those reported in Eddey and Taylor (1999) who find that there is no systematic evidence of earnings management by targets in Australia.

This chapter contributes to the existing literature on earnings management by targets in M&A. Firstly, unlike prior research that focuses on US targets, this study is concerned with UK targets. Secondly, the study adds to the existing research which presents evidence that opportunistic accruals earnings management is not a widespread practice among UK targets. Moreover, the analysis of the effect of deal premium on earnings management by UK targets shows that the deal premium and the targets' abnormal accruals are negatively related, suggesting that acquirers take into

consideration the quality of targets' earnings in making takeover decisions. In a broader context, while earnings quality has been shown to affect the acquirers' takeover decisions, the evidence in this chapter suggests that the deal premium constrains targets' accruals earnings management and acts as a strong disincentive to manipulate earnings in this way. Consequently, the cost of detection explanation for the lack of earnings management by UK targets appears to explain the relationship between the deal premium and the abnormal accruals of targets in the UK.

Given the lack of evidence of accruals earnings manipulation by UK targets prior to a deal, the next chapter examines a possible cause of this earnings management behaviour, in particular it investigates whether earnings management is alleviated or exacerbated by targets' diversification.

# Chapter 6  Accruals Earnings Management and UK Targets' Diversification

## 6.1 Introduction

The previous empirical chapter examines the accruals earnings management by targets in M&A, and furthermore investigates the effect of deal premium as a constraint of earnings management behaviour of targets prior to a takeover. This chapter builds on the main findings of the previous chapter and examines whether or not targets' diversification has an impact on accruals earnings management.

It is generally accepted that the global financial crisis has reinvigorated a debate on the usefulness of public financial accounting information, the extent of firms' management discretion and the effectiveness of takeover regulatory framework. Questions abound, ranging from how much discretion corporate managers should exercise in disclosing financial accounting information and whether the existing international accounting standards and the EU takeover regulation could potentially allow managers to manipulate earnings. Prior literature on earnings management in M&A has attempted to detect and provide evidence of earning manipulation by targets. However, the results are mixed and come mainly from a small number of mostly US

studies (e.g., Easterwood, 1997; Erickson and Wang, 1999; Shen, 2005; Anilowski et al., 2009; Anagnostopoulou and Tsekrekos, 2012, 2013). A different strand of literature studies the complexity of the targets' organizational structure and whether earnings management is mitigated or facilitated by corporate diversification (e.g., Jiraporn et al., 2008; Lim et al., 2008; Rodríguez-Pérez and Van Hemmen, 2010; El Mehdi and Seboui, 2011).

The objective of this chapter is to examine whether corporate diversification has an impact on earnings management by UK targets in mergers and acquisitions. Following prior research (e.g., Jiraporn et al., 2008; El Mehdi and Seboui, 2011), an explicit distinction between industrial and geographical diversification is made in this study. Some empirical and theoretical studies in accounting investigate different hypotheses related to earnings management and corporate diversification. Early research documents a value discount associated with diversification and argues that this empirical evidence is consistent with the informational asymmetry hypothesis (e.g., Lang and Stulz, 1994; Berger and Ofek, 1995; Denis et al., 1997, 2012). The informational asymmetry hypothesis predicts a positive relationship between the degree of earnings management and corporate diversification, suggesting that firms that are industrially and/or geographically diversified are more likely to engage in earnings management than firms that operate in a single segment or country. For example, Lim et al. (2008) examine diversification and earnings management in a SEO setting in the US and claim that diversified firms are more aggressive in manipulating earnings than focused companies.

More recent research finds empirical evidence which is consistent with the offsetting accruals hypothesis (e.g., Jiraporn et al., 2008; El Mehdi and Seboui, 2011). This hypothesis claims that managers of diversified firms have more flexibility to manipulate earnings across business units. However, the resulting total accruals are less

volatile, imperfectly correlated and tend to offset each other, leading to a lower degree of discretionary accruals. Therefore, the offsetting accruals hypothesis predicts a negative relationship between the degree of earnings management and diversification. Consistent with the offsetting accruals hypothesis, Jiraporn et al. (2008) argue that industrial diversification helps to mitigate discretionary accruals, however, global diversification does not impact on earnings management. In the same line of research, El Mehdi and Seboui (2011) examine a sample of US firms and find that geographical diversification increases earnings management, but industrial diversification mitigates it. To sum up, the evidence provided by studies investigating both the informational asymmetry hypothesis and the offsetting accruals hypothesis shows that the mode of diversification (industrial vs. geographical) can explain the difference in the correlation between discretionary accruals and diversification due to whether they are in different industry segments and/or business units are located in different (Kim and Kim, 2001).

By investigating the relationship between earnings management and corporate diversification and using a panel data framework for a sample of 229 UK publicly listed targets, this empirical chapter contributes to the existing literature on accruals earnings management by targets in M&A and the impact of corporate diversification on earnings management.

Firstly, unlike prior research that focuses on US firms, this study is concerned with UK companies. The UK setting is particularly interesting as the segment reporting requirements have changed dramatically in the last two decades or more, from the UK GAAP SSAP 25 introduced in 1990, to IAS 14R in 2005, and the adoption of IFRS 8 from 2009. These three generations of segmental reporting, SSAP 25, IAS 14R and IFRS 8, differ significantly in terms of the principle of segment diversification, types of segments required for disclosure and the quantity of accounting data to be reported per segment (Aleksanyan and Danbolt, 2012). Secondly, this analysis adds to the existing

research by providing new evidence in favour of the offsetting accruals hypothesis, whereby accruals earnings management is lower in industrially diversified firms and a combination of industrial and geographical diversification alleviates earnings management. The empirical results are consistent with those reported in Jiraporn et al. (2008) and El Mehdi and Seboui (2011) for US firms.

This chapter is organised as follows: section two discusses the literature review and develops the hypothesis of this study. Section three presents the data and research methods and section four reports and discusses the empirical results. Finally, section five concludes the chapter.

## 6.2 Literature Review and Hypothesis Development

The first part of this section reviews the literature on earnings management by targets and the second part presents the most relevant empirical studies on the relationship between corporate diversification and accruals earnings management. Finally, this section develops the research hypothesis.

### 6.2.1 Earnings Management by Targets in M&A

Targets' managers have strong incentives to manipulate reported earnings upward prior to a takeover in an attempt to boost the stock price. There are three main motives why they may agree to merge or be acquired. Firstly, acting in the shareholders' interest, managers may engage in manipulating reported earnings to increase the deal premium for shareholders. In this respect, there is clear evidence that targets'

shareholders make substantial gains in takeovers in the form of a deal premium (Moeller et al., 2004; Antoniou et al., 2008). Secondly, targets' managers may agree to merge for personal reasons (retirement or illiquid stock ownership) and have, therefore, clear incentives to manipulate reported earnings. In order to increase their personal benefits extracted from mergers and acquisitions, targets' managers can also negotiate large cash payments in the form of special bonuses or increased golden parachutes (Hartzell et al., 2004), as well as generous severance pay or top positions within the merged company (Shleifer and Vishny, 2003). Finally, targets may also have incentives to manage earnings upward prior to a takeover in response to earnings manipulation by the acquirers. Under the takeover defence hypothesis (Easterwood, 1997), if the acquirer overstates prior earnings, then the target can anticipate the degree of earnings manipulation and adjust upward its reported earnings in order to gain a higher deal premium from the acquirer (Erickson and Wang, 1999; Louis, 2004).

However, there are also high costs associated with accruals earnings manipulation. This is costly primarily due to auditors' and regulators' scrutiny and litigation risk (e.g., Graham et al., 2005; Zang, 2011). In addition to these constraints, the cost of detection of any opportunistic earnings manipulation before a deal could result in a significant loss of credibility among investors and in the market for corporate control. More importantly, in the M&A context one significant consequence of earnings manipulation would be a decreased deal value and premium offered by the acquirer, or even the cancellation of the deal .

Prior research has attempted to detect and provide evidence of earnings management by targets in M&A. However, the evidence provided by these empirical studies is mixed and has been provided by a small number of mostly US studies (e.g., Easterwood, 1997; Erickson and Wang, 1999; Shen, 2005). While Easterwood (1997) and Erickson and Wang (1999) find that targets attempt to manipulate upward reported

earnings in hostile takeovers and stock-for-stock deals, respectively, Eddey and Taylor (1999) provide unclear evidence that earnings management is used to support target directors' recommendations on bids within Australia. Consistent with their findings, Anilowski et al. (2009) argue that targets in auction deals are more likely to use income-increasing earnings management to boost the stock price prior to a takeover.

Unlike prior studies, Shen (2005) and Anagnostopoulou and Tsekrekos (2012) examine US soliciting targets and "seeking buyer" firms and find that these specific targets engage in income-decreasing accruals earnings management and more interestingly, they claim that soliciting targets make income-decreasing accruals choices to 'clean-up' their financial statements before a takeover which leads to an increased probability of securing a takeover. In the same line of research, providing evidence for UK targets, Anagnostopoulou and Tsekrekos (2013) document that the income-decreasing earnings management behaviour previously reported in the US is also confirmed for the UK and Italy, but not for other European countries. In addition, their results also reveal significantly positive abnormal returns for UK "seeking buyer" firms. However, more recent empirical evidence suggests that at times of heightened scrutiny such as M&A transactions, earnings management via accruals is unlikely to be a dominant source of overvaluation (Roychowdhury et al., 2012).

## 6.2.2  Corporate Diversification and Earnings Management

Most of the empirical studies on diversification are devoted to determining whether corporate diversification is beneficial or detrimental to firm value, and implicitly to shareholders. The relationship between diversification and earnings management can be potentially explained by two competing hypotheses: the

informational asymmetry hypothesis and the offsetting accruals hypothesis (earnings volatility hypothesis). Early research documents a value discount associated with diversification and claims that the evidence supports the agency theory hypothesis or informational asymmetry hypothesis (e.g., Lang and Stulz, 1994; Berger and Ofek, 1995; Denis et al., 1997, 2012).[71]

The informational asymmetry hypothesis argues that firms which operate in many industries or/and many countries tend to have more a sophisticated firm structure to control the operations of the firm. When a firm is industrially and/or geographically diversified, it is regarded to be more difficult to scrutinise the firm's earnings reports and requires more resources and expertise for investors and analysts.[72] As a result, the degree of informational asymmetry is higher in diversified firms, so diversified firms are less transparent than focused companies. The managers of diversified firms may exploit the additional informational asymmetry and engage in more earnings management than those of focused firms. On the other hand, managers of diversified firms can reduce the information asymmetry by credibly increasing segment disclosure and signalling more information to the public and the shareholders (Subramanyam, 1996).

Whether earnings management is employed opportunistically or beneficially, the informational asymmetry hypothesis predicts a positive relationship between the degree of earnings management and corporate diversification, which suggests that firms which are industrially or geographically diversified are more likely to engage in earnings management than firms which operate in a single segment or country. In addition, firms that are diversified both industrially and geographically should exhibit the highest informational asymmetry, and therefore the highest degree of earnings management.

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[71] However a few recent studies question the diversification discount and claim that the discount is due to measurement errors or usage of a certain methodology (Whited, 2001; Villalonga, 2004b).

[72] Following industrially diversified firms will take an analyst out of his or her area of expertise as individual financial analysts often specialise within one particular industry which leads to greater difficulty to scrutinise diversified firms (Thomas, 2002).

Lim et al. (2008) examine diversification and earnings management in a SEO setting and claim that diversified firms are more aggressive in manipulating earnings than focused companies.

More recent research on diversification and earnings management questions the focus-related information benefits for the diversified firms (Jiraporn et al., 2008), and finds that greater diversification is not associated with increased asymmetric information (Thomas, 2002). The competing hypothesis that provides evidence in favour of diversification is the offsetting accruals hypothesis. This argues that it is more efficient to allocate capital among different business divisions within the same company rather than raising capital from external sources, via "internal capital market". Applied to earnings management, this hypothesis claims that managers of diversified firms have more flexibility to manipulate earnings across business units. However, the resulting total accruals are less volatile and less than perfectly correlated, and therefore tend to offset each other, leading to lower degree of discretionary accruals.[73] Therefore, a negative relationship between the degree of earnings management and diversification is predicted by the offsetting accruals hypothesis. Industrially diversified firms and geographically diversified firms should have lower discretionary accruals than focused ones.

Finally, firms that are diversified both industrially and geographically should have the lowest degree of earnings management. Consistent with the offsetting accruals hypothesis, Jiraporn et al. (2008) claim that industrial diversification helps mitigate discretionary accruals. However, global diversification does not impact earnings management. In line with this research, examining a sample of US firms El Mehdi and

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[73] Thomas (2002) argues that corporate diversification is not strictly associated with an increase in asymmetric information, which suggests that errors that outsiders make in forecasting segment cash flows are larger than the errors they make in predicting focused firm cash flows, and therefore the consolidated forecast may be more accurate than a forecast for a focused firm.

Seboui (2011) also find that geographic diversification increases earnings management, but industrial diversification mitigates it. Therefore, the mode of diversification (industrial vs. geographic) can explain the difference in the correlation between discretionary accruals and diversification (Kim and Kim, 2001).

In the UK the segmental reporting requirements have changed fundamentally since 1990, with a shift from the UK GAAP SSAP 25 adopted in 1990, to IAS 14R in 2005 (as a result of the EU regulation requiring all listed European companies to report under IAS), and the adoption of IFRS 8 from 2009. The first standard, SSAP 25, established a more precise framework for segment identification and reporting. Segments had to be determined on a risk-return basis and a 10% rule of materiality was introduced to define reportable segments. SSAP 25 required the disclosure of sales, profit before taxation and net assets for each reported segment. Similarly to SSAP 25, IAS 14R required companies to disclose sales, results and assets for both line-of-business (LOB) and geographic segments[74] and used a mix of the risk-return and managerial approach as a guiding principle for segment identification (Aleksanyan and Danbolt, 2012). While IAS 14R was considered a step towards more comprehensive segmental reporting, it was also criticised for the lack of clear guidance in defining a reportable segment and presenting segmental information (e.g., Street and Nichols, 2002; Nichols and Street, 2007). The adoption of IFRS 8 in 2009 was the most controversial as it prescribed a managerial approach to segment identification,[75] aligning

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[74] IAS 14R introduced a two-tier segmentation, thus, two sets of segments, primary and secondary, had to be identified and reported. In addition, more accounting information (such as liabilities, capital expenditure, depreciation etc) had to be disclosed for primary than secondary segments.

[75] IFRS 8 requires the disclosure of information relating to operating segments that the Chief Operating Decision Maker (CODM, as an individual or function) uses internally for financial reporting purposes. Furthermore, for the first time, non-IFRS measures are used to report segmental performance, and geographic disclosures were replaced by entity-wise disclosures (products and services, and major customers) under IFRS 8. Crawford et al. (2012) provide a detailed review of the differences between IAS 14R and IFRS 8.

the segmental reporting rules in the EU, and implicitly the UK, with SFAS 131 in the US.

This chapter focuses on the M&A setting where the occurrence and direction of earnings management is unclear, as targets have strong incentives to manipulate earnings, but the benefits are offset by costs associated with heightened scrutiny by investors, analysts and financial advisors and greater litigation. To the extent that the accruals generated by different business units are imperfectly correlated and tend to offset each other at the firms' level, making it more difficult for managers to manipulate earnings via accruals, this study predicts that diversified targets to be less aggressive in managing earnings than focused ones. Put differently, it is expected that the degree of firm diversification to be negatively associated with accruals earnings management. Thus, the hypothesis is:

**H1**: Discretionary accruals of diversified targets in the years prior to M&A transactions are lower than those of focused targets.

## 6.3 Data and Research Methodology

This section first presents the selection process of the sample used to test the research hypothesis of this chapter. Then the research methodology employed to estimate discretionary accruals and to investigate the relationship between firm diversification and accruals earnings management will be discussed in detail in this section.

## 6.3.1  Data and Sample Selection

The sample used to test the research hypothesis of this study consists of 229 UK targets. Following prior research (Jiraporn et al., 2008; El Mehdi and Seboui, 2011), a clear distinction is made between industrial and geographical diversification. A firm is classified as industrially diversified if it reports more than one business segment in the Worldscope database based on its 4-digit SIC code, and a firm is considered as geographically diversified if it reports sales for other countries than UK. As mentioned before, the UK segment reporting requirements have changed dramatically during the study period from the UK GAAP SSAP 25 introduced in 1990, to IAS 14R in 2005 (as a result of the EU regulation requiring all listed European companies to report under IAS). Under SSAP 25 and IAS 14R, UK firms were required to report information on industry and geographic segments whose sales, assets or profits exceed 10% of the consolidated totals.

The sample of 229 targets used in this study was obtained from the pooled targets sample (257 UK targets involved in completed deals during the period 1990-2008) whose complex selection process was presented previously in *Chapter 4 Data and Research Methods*. Segmental data for each target in this sample (257 targets) were obtained from the Worldscope database over the period 1990-2008. However, the Worldscope database does not provide segmental information for all the targets. Therefore, missing data on industry segments for 23 firms and data on geographic segments for 8 firms were collected manually using their annual reports from the Nexis/Lexis database. The remaining 27 firms with missing segmental data were deleted from the sample leaving 230 targets with complete financial and segmental data. Finally,

in line with prior studies, 1 firm with a HERF value higher than 1 was deleted, leaving

229 targets in the sample. Table 6.1 reconciles the pooled targets and final samples. The

final sample of 687 observations used for descriptive statistics purposes within this

study results from the pooled dataset for 229 targets and three-year event period, in

particular the Year 0, -1 and -2. However, the sample size varies within the empirical

analysis from 687 to 662 observations due to missing data on various diversification and

control variables.

The distribution of targets by industry for this sample is similar to that of the

pooled targets sample, 17 industry groupings (based on 2-digit SIC codes) were formed

to estimate cross-sectional discretionary accruals (Cohen and Zarowin, 2010). The

untabulated results indicate that the deals in the sample are spread across a variety of

industries, with the firms in Computer Equipment and Services (41 firms or 17.90%)

and All Others (44 firms or 19.21%) having the greatest proportion. Furthermore, the

untabulated distribution of deals per year exhibits the same pattern as that of the pooled

targets sample; specifically the number of deals occurring over the period 1995-2000 are

predominant, which is consistent with prior studies in the UK (e.g., Botsari and Meeks,

2008).

Table 6.2 presents the distribution of targets by firm-type and year. This table

reports the time-series of deals and firm type (diversified vs. focused firms). Out of 229

targets, the sample consists of 143 (62.45%) diversified firms and 86 (37.55%) focused

firms.

Table 6.3 presents the distribution of targets by firm type (single-segment

domestic firms, multi-segment domestic firms, single-segment global firms and multi-

segment global). A combination of industry segments and geographic region data was

used to obtain four groups of firms. It is worth noting that multi-segment global firms

have the largest number of firms (95), representing more than 41.48% of the total targets.

Table 6.4 presents descriptive statistics for firm characteristics by firm-type. In terms of size, diversified firms are significantly higher than focused firms. For example, the mean sales for the diversified firms is £475.81 mil., while the mean for focused firms is £224.12 mil. They also have much higher total assets and market capitalisation. The differences in means for these firm characteristics (sales, total assets and market capitalisation) are statistically significant. Diversified firms carry more debt than focused firms: the mean debt to equity ratio for diversified firms is 66.79% while the mean for focused firms is only 30.23%. The difference is also statistically significant. They also have fewer growth opportunities and are apparently more profitable. The difference in means for return on assets, however, is not statistically significant. These characteristics are generally consistent with those reported in prior studies (e.g., Jiraporn et al., 2008).

The correlations between target's size, Sales Growth Ratio, Leverage (Debt to Equity Ratio), Decline and Loss dummy variables were checked and the results are presented in table 6.5.[76] The results show that most of the pair-wise correlations among these variables are relatively low around -/+0.20 which suggests that there is no multicolliniarity problem in this study.[77] The analysis of partial correlations is also repeated for alternative measures of diversifications, Decline and Loss dummy variables and results are qualitatively the same.

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[76] All these variables are used as control factors in the regression analysis discussed in detail in the next subsection. Their definitions are also presented in table 6.5.

[77] To double-check the results of the pair-wise correlations among explanatory variables, the VIF and CI tests are employed and the results of the previous analysis are supported by these additional tests which provide further evidence that none of the explanatory variables is highly correlated with other variables.

**Table 6.1 Sample Construction: 229 UK-listed Targets Involved in Mergers and Acquisitions between 1 January, 1990 and 31 December, 2008**

| | Number of firms |
|---|---|
| Total number of target firms from the Pooled UK targets sample | 257 |
| Less firms with missing WORLDSCOPE segmental data | 27 |
| Less firms with HERF>1 | 1 |
| **Total firms for target sample** | **229** |

**Table 6.2 Distribution by Firm-Type and Year**

| Deal Year | Focused Firms | Diversified Firms | Total Firms |
|---|---|---|---|
| 1992 | 1 | 1 | 2 |
| 1993 | 0 | 2 | 2 |
| 1994 | 10 | 4 | 14 |
| 1995 | 4 | 9 | 13 |
| 1996 | 3 | 11 | 14 |
| 1997 | 9 | 17 | 26 |
| 1998 | 13 | 16 | 29 |
| 1999 | 11 | 24 | 35 |
| 2000 | 12 | 22 | 34 |
| 2001 | 2 | 8 | 10 |
| 2002 | 4 | 1 | 5 |
| 2003 | 6 | 2 | 8 |
| 2004 | 1 | 3 | 4 |
| 2005 | 2 | 10 | 12 |
| 2006 | 5 | 5 | 10 |
| 2007 | 2 | 4 | 6 |
| 2008 | 1 | 4 | 5 |
| **Total** | **86** | **143** | **229** |

**Notes:** Focused firms are firms operating in only a single industrial segment whereas, diversified firms are firms operating in more than one industrial segment.

**Table 6.3 Matrix of Ranking Focused and Diversified Firms into Domestic and Multinational firms**

| | Focused Firms (86) | | Diversified Firms (143) | |
|---|---|---|---|---|
| | Domestic | Multinational | Domestic | Multinational |
| Number of firms | 40 | 46 | 48 | 95 |

**Notes:** Focused firms are firms operating in only a single industrial segment, whereas diversified firms are firms operating in more than one industrial segment. Focused and diversified firms are classified into domestic and multinational firms. Domestic firms are firms operating in only single country whereas, multinational firms are firms operating in more than one country. A combination of industrial segment and geographic segment data is used to obtain four groups of firms.

**Table 6.4 Summary Statistics for Firm Characteristics by Firm-Type**

| | Focused Firms (86) | | Diversified Firms (143) | | Means differences | |
|---|---|---|---|---|---|---|
| | Mean | SD | Mean | SD | t-statistics | P-value |
| Sales (£m) | 224.1238 | 442.2005 | 475.8087 | 785.3006 | -6.0540 | 0.0000 |
| Total Assets (£m) | 149.0268 | 244.7106 | 455.2337 | 795.8726 | -6.2630 | 0.0000 |
| Market Capitalisation (£m) | 155.6689 | 227.2510 | 380.1926 | 756.2101 | -4.5320 | 0.0000 |
| Net Income (£m) | 2.4317 | 30.0965 | 19.7564 | 68.7740 | -4.5080 | 0.0000 |
| Return on Assets (%) | 4.04734 | 13.2330 | 5.1310 | 10.0950 | 0.2860 | 0.7748 |
| Sales Growth Ratio (%) | 11.4931 | 30.5122 | 6.2090 | 20.9080 | 2.0360 | 0.0417 |
| Debt to Equity Ratio (%) | 30.2292 | 410.3000 | 66.7942 | 193.0900 | -2.7920 | 0.0052 |

**Notes:** Sales, total assets, market capitalisation and net income are the target's Net Sales, Total Assets, Market Capitalisation and Net Income before Extraordinary Items and Preferred Dividends the year before the deal is announced (Year 0 as defined in this chapter). The corresponding Worldscope items are WC01001, WC02999, WC08001, and WC01551 respectively. Return on Assets is computed as Net Income before Extraordinary Items and Preferred Dividends (WC01551) at Year 0 over the lagged Total Assets (WC02999). Sales Growth Ratio is computed as percentage change in sales at Year 0. Debt to Equity Ratio is computed as Total Debt (WC03255) over Common Equity (WC03501) at Year 0.

**Table 6.5 Correlation Matrix for Explanatory Variables**

| | MultiSegment | SIZE | SGROW | LEV | DECLINE_1 | LOSS_1 |
|---|---|---|---|---|---|---|
| MultiSegment | 1 | | | | | |
| SIZE | 0.1964 | 1 | | | | |
| SGROW | -0.0960 | 0.0838 | 1 | | | |
| LEV | 0.0318 | 0.0470 | -0.0061 | 1 | | |
| DECLINE_1 | 0.0198 | -0.0334 | -0.0885 | 0.0430 | 1 | |
| LOSS_1 | -0.0675 | -0.1301 | -0.1077 | 0.0393 | 0.2469 | 1 |

**Notes:** MultiSegment is a dummy variable which equals 1 if the firm is industrially diversified and 0 otherwise. *SIZE* represents the natural log of market capitalisation. *SGROW* is sales growth ratio. The *LEV* ratio is total debt to total equity. *DECLINE_1* is a dummy variable which equals 1 if there is any decline in pre-managed earnings (computed on the basis of discretionary current accruals estimated using the cross-sectional modified Jones model) from those of the previous year, and 0 otherwise. *LOSS_1* is a dummy variable which equals 1 if pre-managed earnings (computed on the basis of discretionary current accruals estimated using the cross-sectional modified Jones model) are negative, and 0 otherwise.

## 6.3.2  Research Methodology

This section first presents the earnings management measures used to estimate discretionary accruals and the firm diversification metrics. Next, the panel data regression model employed to investigate the relationship between abnormal accruals and firm diversification will be discussed in detail.

### A.  Abnormal Accruals Measures of Earnings Management

Following recent literature on earnings management in M&A (e.g., Louis, 2004; Ball and Shivakumar, 2008; Botsari and Meeks, 2008; Cohen and Zarowin, 2010), two cross-sectional accruals models, namely, the modified-Jones model (Dechow et al., 1995) and the performance-matched Jones model (Kothari et al., 2005), are employed in this study. The second model is used to estimate an additional measure of abnormal current accruals because Dechow et al. (1995) find that the modified-Jones model (Dechow et al., 1995) leads to misspecified tests when this model is applied to samples of firms experiencing extreme financial performance. Both models were presented in depth in *Chapter 4 Data and Research Methods.*

The dependent variable in both the modified-Jones model (Dechow et al., 1995) and the performance-matched Jones model (Kothari et al., 2005) is current accruals. This measure is estimated by using both the balance sheet approach and the cash flow approach. As balance sheet discretionary accruals estimates can be biased, the current accruals obtained from cash flow statement is also used to mitigate the measurement error problem (e.g., Hribar and Collins, 2002; Ball and Shivakumar, 2008). Following

Botsari and Meeks (2008), under the Balance sheet approach, the working capital accruals are defined as the change in non-cash current assets, minus the change in current liabilities. Under the Cash flow approach, the working capital accruals are the difference between net income before extraordinary items (as reported in the cash flow statement) and operating cash flow (excluding depreciation). The main motivation for using this proxy for accruals earnings management is that, unlike discretionary total accruals, the discretionary working capital accruals measure has a higher potential as an instrument of earnings manipulation (e.g., Botsari and Meeks, 2008).

Abnormal accruals are computed as the difference between the actual accruals and the normal component of accruals, i.e. estimated non-discretionary accruals. Abnormal accruals are estimated for event years -2, -1, and 0, that is, the three years preceding a takeover, which are most likely to be affect by diversification.[78]

Following the literature, the normal level of accruals for each two-digit SIC code industry grouping/year portfolio with at least 6 observations was estimated using a control sample (e.g., DeFond and Jiambalvo, 1994; Subramanyam, 1996; Botsari and Meeks, 2008). The control sample consists of all UK publicly listed firms that have the necessary data on Worldscope to estimate accruals, excluding the sample firms which had experienced a takeover event. This control sample and the cross-sectional accruals estimation procedure were presented in detail in *Chapter 4 Data and Research Methods.*

As the results of this study are generally similar across the balance sheet approach and cash flow approach, only the results derived from both the cross sectional modified-Jones model and the performance-matched Jones model under the cash flow approach are reported in this chapter.

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[78] All variables are trimmed at 1% and 99% to mitigate extreme observations.

### B. Firm Diversification Measures

Following the literature (e.g., Jiraporn et al., 2008; El Mehdi and Seboui, 2011), this empirical analysis distinguishes between industrial or business diversification, where the target operates in many industrial segments, and geographical or global diversification, where the target operates in many countries. To examine the relationship between discretionary accruals and firm diversification, six measures are used. The first two are dummy variables, *MultiSegment* and *Global,* which equals 1 if the firm is industrially diversified and globally diversified respectively, and 0 otherwise. The next four diversification measures are also dummy variables associated with Single-segment Domestic firms (*SD*), Multi-segment Domestic firms (*MD*), Single-segment Global firms (*SG*), and Multi-segment Global (*MG*), as follows: (a) *SD* equals 1 if the firm operates in only a single segment and only one country, and 0 otherwise; (b) *MD* equals 1 if the firm is only industrially diversified, and 0 otherwise; (c) *SG* equals 1 if the firm is only globally diversified, and 0 otherwise, and (d) *MG* equals 1 if the firm is both industrially and globally diversified, and 0 otherwise.

Additionally, as a robustness test, the analysis is repeated by using the Herfindahl index as a proxy for diversification. Following prior research (e.g., Comment and Jarrell, 1995; Jiraporn et al., 2008; El Mehdi and Seboui, 2011), the Herfindahl index for firm in *i* year *t* is computed as:

$$HERF_{i,t} = \sum \left(\frac{SSale}{Sales}\right)^2 \qquad (6.1)$$

Where *HERF i,t* is the revenue-based Herfindahl index for firm *i* in year *t,* and *SSales* is the segment sale of the firm and *Sales* is the firm's total sales for all reported

segments in that year. The Herfindahl index equals 1 for single-segment or focused firms, and it is less than 1 for multiple-segment or diversified firms. Therefore, the lower the index, the higher the degree of industrial diversification.

It is noteworthy that all these proxies are measured each year of the event period, specifically the Year 0, -1 and -2, as the variation in targets' diversification over time will have a significant effect on the relationship between accruals earnings management and diversification.

### C. Regression Analysis

The objective of this chapter is to investigate whether accruals earnings management is exacerbated or alleviated by targets' diversification. To analyse the relationship between discretionary current accruals and targets' diversification, the Lim et al. (2008) fixed-effects model is used as follows:

$$EM_{i,t} = \beta_0 + \beta_1 DIVERSIFICATION_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 SGROW_{i,t} + \beta_4 LEV_{i,t} +$$
$$\beta_5 DECLINE_{i,t} + \beta_6 LOSS_{i,t} + \beta_7 TIME\ dummies + \mu_i + \varepsilon_{i,t} \qquad (6.2)$$

Where:

*EM* = earning management measured by *ab_wcacc_mjcf* (abnormal working capital accruals estimated using the cross-sectional modified-Jones Model under the cash-flow approach) or *ab_wcacc_pmcf* (abnormal working capital accruals estimated using the cross-sectional performance-matched Jones Model under the cash-flow approach).

*DIVERSIFICATION*= MultiSegment, Global, SD, MD, SG, MG and HERF;
*MultiSegment* =1 if the firm is industrially diversified, 0 otherwise;
*Global* = 1 if the firm is globally diversified, 0 otherwise;
*SD* = 1 if the firm operates in only a single segment and only one country (it is neither industrially or globally diversified), 0 otherwise (Single-segment Domestic);

*MD* =1 if the firm is only industrially diversified, 0 otherwise (Multi-segment Domestic);

*SG* =1 if the firm is only globally diversified, 0 otherwise (Single-segment Global);

*MG* =1if the firm is both industrially and globally diversified, 0 otherwise (Multi-segment Global);

*HERF* =1/(1-revenue-based Herfindahl index);

*Controls for firm characteristics:*

*SIZE* = the natural log of market capitalisation;

*SGROW* = sales growth;

*LEV* = ratio of total debt to total equity;

*DECLINE* = 1 if there is any decline in pre-managed earnings from those of the previous year, 0 otherwise;

*LOSS* = 1 if pre-managed earnings are negative, 0 otherwise;

*Time dummy* = dummy variable which equals 1 if the fiscal year falls within the SSAP25 period (1990-2005) and 0 otherwise (if the fiscal year falls within the IAS 14R period 2006-2008).

$\mu_i$ = individual specific effects;

$\varepsilon_{i,t}$ = random disturbance.

After all the diversification measures are determined for each event year, in particular the Year 0, -1 and -2 (the first three years with an earnings release prior to a deal announcement), the model coefficients are estimated by using pooled data for the whole three-year period.

To date, most studies that examine the relationship between earnings management and diversification have employed OLS regression analysis. Following recent research (e.g., Rodríguez-Pérez and Van Hemmen, 2010; Roychowdhury et al., 2012), a panel data methodology is employed in this research to examine the impact of diversification on accruals earnings management. The main reason why the panel data methodology was used here is that it allows to control for unobservable heterogeneity

(firm-specific effect) represented by parameters $\mu_i$, to obtain consistent estimates for regression parameters.[79] Firms are heterogeneous, and as a result, there are always characteristics that are difficult to measure or data that is impossible to obtain, which leads to biased results. For example, attributes of managers, such as motivation and ability, or internal accounting policies vary across firms, but are assumed to be time-invariant for each firm. Therefore, a fixed-effects (FE) regression model is adopted to control for the impact of independent variables on the estimated coefficients, which is caused by variables not entered into the model, but which are acknowledged to be part of the firm heterogeneity. By including the individual effect into the regression (unobservable firm characteristics), fixed-effects models mitigate the omitted variable problem by capturing unobservable firm characteristics, such as managers' abilities or firm's accounting policies (Wooldridge, 2002).[80]

The main explanatory variables of interest are diversification measures. This study predicts a negative relationship between the discretionary current accruals and diversification measures. It controls for firm characteristics commonly associated with the discretionary current accruals in the related literature, such as size, sales growth, leverage, decline and loss. Based on evidence provided by recent reviews of the earnings management literature (e.g., Doyle et al., 2007), the natural log of market capitalisation (*SIZE*) is included to control for target's size. Presumably, larger firms have stronger incentives and a higher ability to manipulate earnings through accruals than small firms, but higher costs associated with earnings management. The sales growth

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[79] In this study, the panel dataset that has both cross-sectional and time variation is used (Cameron and Trivedi, 2009). As each time period of data is not independent of previous ones, model errors are very likely correlated (correlation over time or across individuals). Therefore, standard errors of panel-data estimators need to be adjusted (Cameron and Trivedi, 2009). Furthermore, in fixed-effects models, regressors may be correlated with the individual level effects (limited form of endogeneity) so that the consistent estimation of regression parameters requires controlling for fixed-effects.
[80] The Hausman specification test is conducted to choose between fixed-effects and random-effects as an alternative panel data approach.

(*GROW*) is included to control for growth opportunities (e.g., McNichols, 2000). Highly leveraged firms are known to report greater income-increasing accruals, therefore a control for leverage is used by adding the ratio of total debt to total equity. Burgstahler and Dichev (1997) claim that firms' managers manipulate earnings upward to avoid earnings decreases and losses, therefore, pre-managed earnings for targets are first estimated. Following Lim et al. (2008), pre-managed earnings are calculated as net income before extraordinary items and preferred dividends divided by total assets net of discretionary accruals. Based on pre-managed earnings, two dummy variables are created to capture managers' incentives to avoid earnings decreases and loss, *DECLINE* and *LOSS,* respectively. *DECLINE* equals 1 if there is any decline in pre-managed earnings from those of the previous year, and 0 otherwise. Finally, *LOSS* is 1 if pre-managed earnings are negative, and 0 otherwise.[81]

As there is a concern that the change in the segment reporting requirements in the UK may distort the firm diversification measures used in this empirical analysis, a time dummy variable is added to the model.[82] The study period (1990-2008) covers only two segmental reporting regimes, specifically the SSAP25 period (1990-2005) and the IAS 14R period (2006-2008). The results of the empirical analysis are not affected by the segmental reporting rules imposed by IAS 8 as the last year of the study period is 2008. The two generations of segment reporting – SSAP 25 and IAS 14R – differ significantly in terms of the principle of segment diversification, types of segments

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[81] Dummy variables *DECLINE* and *LOSS* are employed to avoid any econometric problems caused by the fact that the discretionary current accruals are used as a dependent variable and indirectly as an explanatory variable in the regression model. The use of dummy variables alleviates this econometric concern (Lim et al., 2008).

[82] Prior literature on the effect of IFRS adoption on earnings quality shows that while the inherent flexibility in principles-based standards could generate greater opportunity for firms to manage earnings (Barth et al., 2008), tighter accounting standards (like IFRS) also reduce the variability of reported earnings and increase the value-relevance of earnings, which in turn will lower the level of accrual-based manipulation (Ewert and Wagenhofer, 2005). However, Armstrong et al. (2010) suggest that impact of IFRS adoption is conditional on pre-existing country-specific regulations and institutional frameworks, since these determine the level of accounting quality and reporting standards.

required for disclosure and the quantity of accounting data to be reported per segment (Aleksanyan and Danbolt, 2012).

# 6.4 Empirical Results

This section presents first the empirical results of the main analysis, in particular the results of the accruals tests and the regression analysis used to investigate the relationship between targets' diversification and accruals earnings management. Then the robustness checks are discussed in detail in this section.

## 6.4.1  Results of Main Empirical Analysis

The descriptive statistics for the discretionary current accruals estimated using the cross-sectional modified-Jones model ($ab\_wcacc\_mjcf$) and the discretionary current accruals estimated using the cross-sectional performance-matched Jones model ($ab\_wcacc\_pmcf$) are shown in Table 6.6. The reported residuals measure the level of discretionary current accruals as a percentage of lagged total assets. The discretionary current accruals range from -0.4690 to 0.2700, and -0.4674 to 0.2898 respectively. The average is 0.0015, 0.0017 respectively.[83] Table 6.7 reports the results of the fixed-effects panel data regression analysis where the dependent variable is the discretionary current accruals estimated using the cross-sectional modified-Jones model ($ab\_wcacc\_mjcf$).

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[83] Despite the lack of evidence of accruals earnings management by UK targets on average, the minimum and maximum values of discretionary current accruals reported in Table 6.6 show that some targets may use income-decreasing and income-increasing accrual manipulation prior to a takeover.

**Table 6.6 Descriptive Statistics for Discretionary Current Accruals Measures**

|                    | Obs | Mean   | Median | Std. Dev. | Min     | Max    |
|--------------------|-----|--------|--------|-----------|---------|--------|
| *ab_wcacc_mjcf*    | 687 | 0.0015 | 0.0089 | 0.1081    | -0.4690 | 0.2700 |
| *ab_wcacc_pmcf*    | 687 | 0.0017 | 0.0082 | 0.1073    | -0.4674 | 0.2898 |

**Notes:** This table presents discretionary accruals estimates for a pooled sample of 687 observations for 229 UK target firms over a three-year event period (the Year 0, -1 and -2). *ab_wcacc_mjcf* is the discretionary current accruals estimated using the cross-sectional modified-Jones Model under the cash-flow approach and *ab_wcacc_pmcf* is the discretionary current accruals estimated using the cross-sectional performance matched Jones Model under the cash-flow approach.

The choice of this panel data approach was made as the Hausman test statistic is statistically significant, so the fixed-effects model is appropriate. Model 1 includes a dichotomous variable *MultiSegment,* that is equal to 1 if the firm is industrially diversified and 0 otherwise. Control variables are also included in Model 1.

The coefficient for the multi-segment dummy variable is negative and statistically significant at the 5% level, suggesting that industrial diversification mitigates earnings management. The coefficient for this variable is -0.0607 which implies that earnings management is reduced by 6.07% on average when the target is industrially diversified. Model 2 includes a dummy variable *Global* that it is equal to 1 if the firm is globally diversified and 0 otherwise. The coefficient for this variable is positive, but not statistically significant which suggests that global diversification increases earnings management. A possible explanation for these different results for global diversification is that geographically diversified companies are larger and have more complex organisational structures than domestic firms due to their operations in different countries (Bodnar et al., 1997), which creates stronger incentives for managers to manipulate reported earnings. This complexity can lead to more flexibility to divisional managers to cope with changes in prices, differences in taxation regimes and other institutional differences (Denis et al., 2002), but also higher costs of monitoring managerial decision making in geographically diversified firms (Bodnar et al., 1997).

**Table 6.7 Regressions of Discretionary Current Accruals Estimated Using the Cross-Sectional Modified-Jones Model on Diversification Dummies and Controls**

| Variables | (1)<br>ab_wcacc_mjcf | (2)<br>ab_wcacc_mjcf | (3)<br>ab_wcacc_mjcf |
|---|---|---|---|
| **MD** | | | -0.0642* |
| | | | (0.0328) |
| **SG** | | | 0.0251 |
| | | | (0.0513) |
| **MG** | | | -0.0399 |
| | | | (0.0385) |
| **MultiSegment** | -0.0607** | | |
| | (0.0239) | | |
| **Global** | | 0.00580 | |
| | | (0.0335) | |
| *SIZE* | 0.0297** | 0.0240* | 0.0307** |
| | (0.0134) | (0.0140) | (0.0134) |
| *SGROW* | -0.00755 | -0.00884 | -0.00746 |
| | (0.0227) | (0.0226) | (0.0225) |
| *LEV* | -0.00199 | -0.00276 | -0.00190 |
| | (0.00211) | (0.00179) | (0.00213) |
| *DECLINE_1* | 0.0449*** | 0.0451*** | 0.0449*** |
| | (0.00592) | (0.00582) | (0.00581) |
| *LOSS_1* | 0.0589*** | 0.0577*** | 0.0586*** |
| | (0.0113) | (0.0113) | (0.0113) |
| Constant | 1.112 | 1.332 | 1.105 |
| | (1.174) | (1.138) | (1.203) |
| Firm fixed effects | YES | YES | YES |
| Time dummies | YES | YES | YES |
| Observations | 662 | 662 | 662 |
| R-squared | 0.049 | 0.066 | 0.0464 |
| F | 7.20 | 7.20 | 6.70 |

**Notes:** This table presents FE regression estimates for a pooled sample of 662 observations for 229 UK target firms over a three-year event period (the Year 0, -1 and -2). However, the final sample of 662 observations used in the estimation of coefficients is different than the initial one of 687 due to missing data on diversification and control variables. The dependent variable is the discretionary current accruals estimated using the cross-sectional modified Jones model (ab_wcacc_mjcf) in all these models. *SIZE* represents the natural log of market capitalisation. *SGROW* is sales growth ratio. The *LEV* ratio is total debt to total equity. *DECLINE_1* is a dummy variable which equals 1 if there is any decline in pre-managed earnings (computed on the basis of discretionary current accruals estimated using the cross-sectional modified Jones model) from those of the previous year, and 0 otherwise. *LOSS_1* is a dummy variable which equals 1 if pre-managed earnings (computed on the basis of discretionary current accruals estimated using the cross-sectional modified Jones model) are negative, and 0 otherwise. All the models include an intercept and firm-fixed effects. Time dummies are also included within these three regression models to control for differences in the UK segment reporting regimes covered by the study period (1990-2008). The value of cluster-robust standard errors is in brackets. ***, **, * indicate that the parameter estimate is significantly different from zero at the 1%, 5% or 10% level, respectively.

In addition to more serious information asymmetry problems between managers and shareholders, less transparency in geographically diversified companies

poses difficulties to financial analysts to analyse these companies' performance and assess their value (Duru and Reeb, 2002).

Finally, in Model 3, three dummy variables (*MD, SG,* and *MG)* are included to distinguish between multi-segment domestic firms, single-segment global firms and multi-segment global firms. The coefficient for the multi-segment domestic firms is negative and statistically significant at the 10% level. This result suggests that a combination of industrial and geographical diversification mitigates earnings management by 6.42% on average. These results are consistent with Jiraporn et al. (2008) who provide evidence of a negative relationship between earnings management and industrial diversification and show that a combination of industrial and global diversification helps alleviate earnings. El Mehdi and Seboui (2011) also find that industrial diversification decreases earnings management by US firms.

Among the control variables, the size coefficient appears to be positive and significant in all three models. In line with other studies, larger firms tend to manipulate earnings more than smaller ones supporting the argument that larger firms take advantage of their more severe informational asymmetry (e.g., Rodríguez-Pérez and Van Hemmen, 2010).

## 6.4.2 Robustness Check: Alternative Measures of Earnings Management and Firm Diversification

So far, the discretionary current accruals estimated from the modified-Jones model ($ab\_wcacc\_mjcf$) have been used to examine the relationship between earnings management and target diversification. To test the robustness of the results, the

discretionary current accruals from the performance-matched Jones model ($ab\_wcacc\_pmcf$) are used as an alternative proxy for earnings management.[84]

Table 6.8 shows the results of the fixed-effects regression models where the dependent variable is the discretionary current accruals estimated from the performance-matched Jones model ($ab\_wcacc\_pmcf$). In Model 1, the multi-segment dummy variable coefficient is negative and statistically significant at the 5% level, which is consistent with the hypothesis in this study that industrial diversification is associated with less earnings management by targets. The global dummy variable is not statistically significant in Model 2. These findings are similar to previous results obtained by using the discretionary current accruals estimated from the modified-Jones model. Finally, in Model 3, the multi-segment domestic dummy variable is negative, but is not statistically significant.

To further check the robustness of the results, an alternative measure of industrial diversification is used. Following prior studies on diversification (e.g., Berger and Ofek, 1995; Comment and Jarrell, 1995; Jiraporn et al., 2008; Lim et al., 2008), the Herfindahl index is employed as a proxy for industrial diversification: the lower the index, the higher the degree of industrial diversification. For ease of interpretation, the reciprocal of the Herfindahl index is used in the regression analysis. Table 6.9 presents the FE regression results using this alternative measure of diversification. Model 1 includes the discretionary current accruals estimated from the modified-Jones model ($ab\_wcacc\_mjcf$) and Model 2 includes the discretionary current accruals estimated from the performance-matched Jones model ($ab\_wcacc\_pmcf$). In both models, Model 1 and Model 2, the coefficient for the reciprocal of the Herfindahl index is negative and statistically significant at 1% and 5%, respectively.

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[84] The results also hold when abnormal accruals measure is estimated using median regression (instead of OLS), suggesting that it is unlikely that the results are driven by outliers.

**Table 6.8 Regressions of Discretionary Current Accruals Estimated Using the Cross-Sectional Performance Matched Model on Diversification Dummies and Controls**

| Variables | (1) ab_wcacc_pmcf | (2) ab_wcacc_pmcf | (3) ab_wcacc_pmcf |
|---|---|---|---|
| **MD** | | | -0.0475 |
| | | | (0.0325) |
| **SG** | | | 0.0240 |
| | | | (0.0512) |
| **MG** | | | -0.0306 |
| | | | (0.0400) |
| **MultiSegment** | -0.0482** | | |
| | (0.0240) | | |
| **Global** | | 0.00419 | |
| | | (0.0354) | |
| *SIZE* | 0.0250* | 0.0203 | 0.0256* |
| | (0.0133) | (0.0138) | (0.0133) |
| *SGROW* | 0.0113 | 0.0105 | 0.0115 |
| | (0.0258) | (0.0257) | (0.0257) |
| *LEV* | -0.00100 | -0.00161 | -0.000960 |
| | (0.00226) | (0.00197) | (0.00226) |
| *DECLINE_2* | 0.0482*** | 0.0489*** | 0.0484*** |
| | (0.00610) | (0.00608) | (0.00611) |
| *LOSS_2* | 0.0758*** | 0.0748*** | 0.0752*** |
| | (0.0143) | (0.0141) | (0.0141) |
| Constant | 0.873 | 1.048 | 0.851 |
| | (0.882) | (0.897) | (0.911) |
| Firm fixed effects | YES | YES | YES |
| Time dummies | YES | YES | YES |
| Observations | 662 | 662 | 662 |
| R-squared | 0.0685 | 0.0879 | 0.0627 |
| F | 8.00 | **7.70** | 7.37 |

**Notes:** This table presents FE regression estimates for a pooled sample of 662 observations for 229 UK target firms over a three-year event period (the Year 0, -1 and -2). However, the final sample of 662 observations used in the estimation of coefficients is different than the initial one of 687 due to missing data on diversification and control variables. The dependent variable is the discretionary current accruals estimated using the cross-sectional performance matched Jones Model (ab_wcacc_pmcf) in all these models. *SIZE* represents the natural log of market capitalisation. *SGROW* is sales growth ratio. The *LEV* ratio is total debt to total equity. *DECLINE_2* is a dummy variable which equals 1 if there is any decline in pre-managed earnings (computed on the basis of discretionary current accruals estimated using the cross-sectional performance matched Jones Model) from those of the previous year, and 0 otherwise. *LOSS_2* is a dummy variable which equals 1 if pre-managed earnings (computed on the basis of discretionary current accruals estimated using the cross-sectional performance matched Jones Model) are negative, and 0 otherwise. All the models include an intercept and firm-fixed effects. Time dummies are also included within these three regression models to control for differences in the UK segment reporting regimes covered by the study period (1990-2008). The value of cluster-robust standard errors is in brackets. ***, **, * indicate that the parameter estimate is significantly different from zero at the 1%, 5% or 10% level, respectively.

**Table 6.9 Regressions of Discretionary Current Accruals Proxies, the Herfindahl Index and Controls**

| Variables | (1) ab_wcacc_mjcf | (2) ab_wcacc_pmcf |
|---|---|---|
| **1/HERF** | **-0.0215***** | **-0.0190**** |
| | **(0.00793)** | **(0.00867)** |
| *SIZE* | 0.0244* | 0.0208 |
| | (0.0137) | (0.0135) |
| *SGROW* | -0.00661 | 0.0125 |
| | (0.0230) | (0.0260) |
| *LEV* | -0.00253 | -0.00139 |
| | (0.00181) | (0.00199) |
| *DECLINE_1* | 0.0454*** | |
| | (0.00596) | |
| *LOSS_1* | 0.0587*** | |
| | (0.0111) | |
| *DECLINE_2* | | 0.0486*** |
| | | (0.00613) |
| *LOSS_2* | | 0.0764*** |
| | | (0.0143) |
| Constant | 1.189 | 0.919 |
| | (1.219) | (0.941) |
| Firm fixed effects | YES | YES |
| Time dummies | YES | YES |
| Observations | 662 | 662 |
| R-squared | 0.0741 | 0.0967 |
| F | 7.28 | 7.84 |

**Notes:** This table presents FE regression estimates for a pooled sample of 662 observations for 229 UK target firms over a three-year event period (the Year 0, -1 and -2). However, the final sample of 662 observations used in the estimation of coefficients is different than the initial one of 687 due to missing data on diversification and control variables. The dependent variables are the discretionary current accruals estimated using the cross-sectional modified Jones model (ab_wcacc_mjcf) and the discretionary current accruals estimated using the cross-sectional modified Jones model (ab_wcacc_pmcf) in all these models. *SIZE* represents the natural log of market capitalisation. *SGROW* is sales growth ratio. The *LEV* ratio is total debt to total equity. *DECLINE_1* is a dummy variable which equals 1 if there is any decline in pre-managed earnings (computed on the basis of the discretionary current accruals estimated using the cross-sectional modified Jones model) from those of the previous year, and 0 otherwise. *DECLINE_2* is a dummy variable which equals 1 if there is any decline in pre-managed earnings (computed on the basis of the discretionary current accruals estimated using the cross-sectional performance matched Jones Model) from those of the previous year, and 0 otherwise. *LOSS_1* is a dummy variable which equals 1 if pre-managed earnings (computed on the basis of discretionary current accruals estimated using the cross-sectional modified Jones model) are negative, and 0 otherwise. *LOSS_2* is a dummy variable which equals 1 if pre-managed earnings (computed on the basis of the discretionary current accruals estimated using the cross-sectional performance matched Jones Model) are negative, and 0 otherwise. All the models include an intercept and firm-fixed effects. Time dummies are also included within these two regression models to control for differences in the UK segment reporting regimes covered by the study period (1990-2008). The value of cluster-robust standard errors is in brackets. ***, **, * indicate that the parameter estimate is significantly different from zero at the 1%, 5% or 10% level, respectively.

The evidence confirms the previous results obtained by using the multi-segment

dummy variable. In conclusion, when alternative measures of earnings management and

diversification are used, the new results are qualitatively similar. Therefore, the evidence appears to be robust.

## 6.5 Conclusions

This chapter investigates whether earnings management is facilitated or mitigated by corporate diversification for a sample of 229 UK publicly listed target firms between 1990 and 2008. Following the literature (Jiraporn et al., 2008; El Mehdi and Seboui, 2011), an explicit distinction between industrial diversification and geographic diversification is made in this chapter. The empirical evidence derived both from a cross-sectional analysis based on the modified-Jones model and the performance-matched Jones model, and a FE regression analysis, is in favour of the offsetting accruals hypothesis.

The results of this empirical study suggest that corporate diversification does not contribute to a higher magnitude of earnings management. On the contrary, industrial diversification mitigates earnings management by UK targets prior to mergers and acquisitions. In addition, the results of this study also show that a combination of industrial and geographic diversification alleviates earnings management. However, there is no clear empirical evidence that geographical diversification facilitates or mitigates earnings management by UK targets. The positive effect of geographical diversification in this study may suggest that increased informational asymmetry in geographically diversified companies gives managers more room to manipulate earnings when they have stronger incentives to do so as in the context of M&A.

These results are consistent with those reported in Jiraporn et al. (2008) who provide evidence of a negative relationship between earnings management and

industrial diversification and show that a combination of industrial and global diversification helps alleviate earnings management. El Mehdi and Seboui (2011) also find that industrial diversification decreases earnings management by US firms.

By investigating the relationship between earnings management and corporate diversification and using a panel data framework for a sample of 229 UK publicly listed targets, this empirical chapter contributes to the existing literature on earnings management by targets in M&A and the impact of corporate diversification on earnings management by providing the main findings.

The next chapter examines both combined and simple strategies of earnings management by targets based on accruals and real-activity and analyses their consequences on targets' stock market performance prior to a deal.

# Chapter 7  Accruals and Real-Activity Earnings Management and UK Targets' Stock Overvaluation

## 7.1 Introduction

The previous chapter focuses on corporate diversification as a potential cause of the non-occurrence of accrual earnings manipulation by UK targets in M&A and investigates whether corporate diversification alleviates or exacerbates earnings management behaviour of targets prior to a deal. This chapter is concerned with the earnings management behaviour of UK targets via accruals and real-activities undertaken prior to M&A and the impact of earnings management in inducing overvaluation at the time of a deal.

In times of heightened emphasis on short-term performance, such as M&A, targets' managers have strong incentives to inflate earnings in an attempt to boost the stock price and generate higher gains for both shareholders and themselves. The extent to which targets' managers use various earnings management methods depends on the benefits and costs of each earnings manipulation technique.

Earnings management can occur through two main channels: accruals earnings management and real-activity earnings management. These two main earnings

management tactics differ in their opacity and can cause overvaluation prior to M&A (Roychowdhury et al., 2012). In accruals earnings management, managers typically report inflated earnings to increase the stock price. However, accruals do not generally involve altering normal business practices, and is costly primarily due to auditors' and regulators' scrutiny and litigation risk (e.g., Graham et al., 2005; Zang, 2011). The cost of detection of any accruals manipulation is high and involves potential litigation risk as target are subject to greater scrutiny from auditors, regulators, as well as acquirers' financial advisors within the due diligence process during M&A.

Prior studies have focused exclusively on accruals earnings management and the evidence provided by these studies is mixed and has been provided mostly by US studies (e.g., Easterwood, 1997; Eddey and Taylor, 1999); Erickson and Wang (1999); (Shen, 2005; Anilowski et al., 2009; Anagnostopoulou and Tsekrekos, 2012, 2013). Furthermore, the evidence of accruals earnings management has been rather context-dependent. Largely, the mixed findings of prior empirical studies show that opportunistic accruals earnings management is not a common practice among targets in M&A. However, these studies do examine accruals manipulation as a sole earnings management technique and ignore real-activity manipulation as an alternative option undertaken by targets simultaneously. As mentioned by Roychowdhury (2006) and Zang (2011), focusing on accruals earnings management exclusively may not fully explain targets' earnings management behaviour.

Another stream of literature examines targets' overvaluation at the time of a deal (e.g., Huang and Walkling, 1987; Davidson and Cheng, 1997; Bauguess et al., 2009) and has provided evidence of a relationship between accruals earnings management and M&A overvaluation (e.g., Rangan, 1998; Teoh et al., 1998b; DuCharme et al., 2004; Roychowdhury et al., 2012). However, other studies question this relationship between

accruals earnings management and overvaluation (e.g, Fama, 1998; Shivakumar, 2000; Hribar and Collins, 2002).

Real-activity earnings management is another possible way to manipulate reported earnings prior to M&A (Cohen and Zarowin, 2010; Gunny, 2010; Zang, 2011; Roychowdhury et al., 2012). Unlike accruals earnings management, real-activity manipulation involves departures from the normal course of operations and has direct cash flow consequences and greater negative effects on the firms' future performance than accruals earnings management (Graham et al., 2005; Gunny, 2005; Zang, 2011).

More recent research on earnings management provides evidence that firms use multiple earnings manipulation strategies based on accruals and real-activities (e.g., Graham et al., 2005; Roychowdhury, 2006; Cohen and Zarowin, 2010; Zang, 2011) and managers prefer real-activities manipulation over accruals earnings manipulation as a way to increase reported earnings (Graham et al., 2005). The view that managers engage in real-activity manipulation and their preference for real-activity techniques as compared to accruals ones is supported by Graham et al. (2005)'s survey evidence suggesting the widespread use of earnings management, especially the real-activity methods. There is mainly a twofold rationale for managers' greater willingness to manipulate earnings through real-activities rather than through accruals. Firstly, accruals manipulation is more likely to draw scrutiny from auditors and regulators and potential litigation penalties than real-activities (Graham et al., 2005; Cohen and Zarowin, 2010; Zang, 2011; Roychowdhury et al., 2012).

In contrast, managers may prefer real-activity earnings management as it is easier to camouflage as "normal" compared to accruals manipulation, and detection of

real-activity manipulation is more "opaque"[85] for investors. Secondly, relying only on accruals manipulation to boost the stock price is too risky (Cohen and Zarowin, 2010) because of the limited flexibility to manage accruals and the timing of earnings management. Accruals management is constrained by business operations and accruals manipulation in prior years (e.g., Barton and Simko, 2002). Therefore, managers are expected to use real-activity earnings management during the fiscal year (Roychowdhury, 2004; Gunny, 2010; Zang, 2011). Given a greater relative opacity of real-activity manipulation, recent empirical evidence suggests that at times of heightened scrutiny, such as M&A and in other settings, earnings management via accruals are unlikely to be a dominant source of overvaluation prior to takeovers (e.g., Cohen and Zarowin, 2010; Roychowdhury et al., 2012).

There are only two US studies to date that examine real-activity earnings management in the context of M&A: Cohen and Zarowin (2010) and Roychowdhury et al. (2012). Unlike them, this chapter investigates the UK targets' earnings management behaviour in the M&A context and whether the means of earnings manipulation, accruals or real-activities, affects the degree of pre-announcement merger overvaluation. As accruals earnings management tests cannot fully capture the firm earnings management behaviour (Roychowdhury, 2006; Zang, 2011) and even worse, these tests can lead to misleading findings,[86] this study allows for the possibility that managers can use both strategies of earnings management simultaneously. Thus, the research design used in this chapter incorporates multiple possible scenarios of income-increasing earnings management.

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[85] According to Roychowdhury et al. (2012), relative opacity of earnings management techniques is defined as "the extent to which earnings management strategies succeed in misleading investors", or "the degree to which external investors can detect and unravel their effects on earnings".
[86] The degree of earnings management detected by analysing only accruals understates the whole earnings manipulation as abnormal real-activities may not have accruals affects (Roychowdhury, 2004).

In terms of earnings management methodology, following Roychowdhury et al. (2012) this study uses a fixed-effects panel data model adjusted for firm-specific and time-period-specific effects to estimate abnormal R&D expenditure. Compared to conventional cross-sectional estimation, the main advantage of this panel data fixed-effects estimation technique is that it allows for data from beyond the M&A event to be incorporated in the measurement of earnings management and mitigates the omitted variable problem by capturing unobservable firm characteristics, such as managers' abilities or firms' accounting policies (Wooldridge, 2002). In addition, the fixed-effects panel data model is adopted to control for unobservable heterogeneity by including the firm individual effect into the regression.

The results of this chapter reveal that if targets engage in income-increasing earnings management, they are more likely to use combined strategies of earnings management via both accruals and real-activities simultaneously rather than simple strategies based solely on either accruals or real-activities.[87] The results also show that managers' propensity to engage in combined strategies of earnings management prior to M&A is significantly higher than the propensity for accruals earnings management despite the high and long-term costs of this earnings management method. These results are closely consistent with those reported by Roychowdhury et al. (2012), however their study does not directly compare simple and combined earnings management methods based on accruals and real-activities. In a broader context, these

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[87] To consider whether real-activity earnings management or accruals earnings management by targets have occurred independently or in conjunction, in this study the term of simultaneity or combined methods of earnings management is used to refer to the type of earnings management means which targets have engaged in prior to M&A. A combined earnings management method in this study does assume a trade-off between accruals earnings management and real-activity earnings management throughout the fiscal year caused by the costs involved by each earnings management method and its timing, which is well-documented in the literature (Roychowdhury, 2006; Cohen et al., 2008; Cohen and Zarowin, 2010; Zang, 2011). However, the issue of complementarity and/or substitution between accruals earnings management and real-activity earnings management and the order firms deploy accruals earnings management and real-activity earnings management to meet earnings benchmarks is not the aim of this study.

findings are also largely consistent with Cohen and Zarowin (2010) as they find evidence of real-activity earnings management along with that of accruals manipulation for SEO firms, although they do not consider whether accruals earnings management or real-activity earnings management occurr solely or jointly, and whether the stock return overvaluation is driven more by simple or combined earnings management methods.

Finally, the short-term stock return tests performed in this chapter provide evidence that firms with positive earnings surprises, unusually low research and development expenses and high discretionary accruals appear to be the most overvalued targets prior to M&A, which is consistent with those results reported by Roychowdhury et al. (2012). The results of the stock return tests are statistically significant and also consistent with those reported for UK firms by prior literature (e.g., Croci and Petmezas, 2010).

This chapter is organised as follows: section two discusses the related literature and develops hypotheses. Section three presents the data and research methods and section four reports and discusses the empirical results. Finally, section five concludes this chapter.

## 7.2 Literature Review and Hypotheses Development

This study examines accruals and real-activity earnings management by UK targets involved in M&A. Targets' managers arguably have strong incentives to manipulate earnings prior to M&A. However, prior studies have focused exclusively on accruals earnings management and the evidence provided by these studies is mixed and has been provided mostly by a small number of US studies (e.g., Easterwood, 1997;

Erickson and Wang, 1999; Shen, 2005). There are only two studies to date that examine real-activity earnings management in the SEO context: Cohen and Zarowin (2010) and Roychowdhury et al. (2012).

## 7.2.1  Earning management via Accruals

M&A are important firm-specific events which heighten the managers' emphasis on short-term performance to the point that they generally create incentives for managers to manipulate earnings in an attempt to boost the stock price prior to a deal (Shleifer and Vishny, 2003). In particular, the targets' stock price is of special interest to managers in M&A as they generally may be motivated to manage reported earnings upward prior to a takeover to increase the deal premium for shareholders. Prior research has provided strong evidence that targets' shareholders make substantial gains in takeovers in the form of a deal premium (e.g., Moeller et al., 2004; Antoniou et al., 2008). Furthermore, faced with the threat of a takeover, targets managers may agree to merge for personal reasons (retirement or illiquid stock ownership) and have, therefore, strong incentives to manipulate reported earnings. In order to increase their personal benefits extracted from mergers and acquisitions, targets' managers can also negotiate large cash payments in the form of special bonuses or increased golden parachutes (e.g., Hartzell et al., 2004), as well as generous severance pay or top positions within the merged company (Shleifer and Vishny, 2003).

In accruals earnings management, managers carry out earnings manipulation in the hope of reporting typically increased earnings and boosting the stock price. However, accruals do not generally involve altering normal business practices and it is costly primarily due to auditors' and regulators' scrutiny and litigation risk (e.g., Graham

et al., 2005; Zang, 2011). In addition, targets are also subject to scrutiny by the acquirers' financial advisors in M&A, and they are also exposed to potential litigation if high levels of earnings management are detected. The cost of detection of any accruals manipulation or fraud before a takeover or during due diligence could result in a significant loss of credibility among investors and in the market for corporate control. The targets may, therefore, choose not to manipulate earnings via accruals prior to a takeover due to the damage that any detected accruals earnings management could do to the deal.

The evidence of accruals earnings management by targets is not wholly convincing, having produced mixed results reflecting the conflicting circumstances of targets involved in M&A; in particular strong incentives to manipulate reported earnings and high costs due to enhanced scrutiny of the firm and its financial statements. Furthermore, the evidence of accruals earnings management has been rather context-dependent. Thus, Easterwood (1997) and Erickson and Wang (1999) find that the abnormal accruals for targets of hostile takeovers and stock-for-stock deals, respectively, are positive during pre-merger periods, but they are not always statistically significant. Eddey and Taylor (1999) provide little evidence that earnings management is used to support target directors' recommendations on bids within Australia.

More recently, Anilowski et al. (2009) also find evidence of income-increasing earnings management in targets acquired via auction as opposed to negotiation. Unlike prior research, Shen (2005) argues that soliciting targets make income-decreasing accruals choices to 'clean-up' their financial statements before a takeover. Consistent with Shen (2005), Anagnostopoulou and Tsekrekos (2012) examine US "seeking buyer" firms and find that these specific targets engage in income-decreasing accruals manipulation up to two years prior to the event and also in the event year. In a cross-country study, Anagnostopoulou and Tsekrekos (2013) claim that the evidence of

income-decreasing earnings management previously reported in the US is also confirmed for the UK and Italy, but not for other European countries. Furthermore, they document significantly positive abnormal returns for UK "seeking buyer" firms.

Another stream of the M&A literature highlights the targets' stock overvaluation at the time of a deal (Huang and Walkling, 1987; Davidson and Cheng, 1997; Bauguess et al., 2009) and, more importantly, has focused on whether stock prices are inflated before the transaction to mislead investors. Thus, studies such as Teoh et al. (1998b), Rangan (1998), DuCharme et al. (2004) and Roychowdhury et al. (2012) have provided evidence of a relationship between accruals earnings management and SEO overvaluation. However, other studies question this relationship and explain the stock price reaction to the deal announcement as anomalies due to methodology (e.g., Fama, 1998), flawed models for estimating discretionary accruals (e.g., Hribar and Collins, 2002) or a rational response to anticipated market behaviour (e.g., Shivakumar, 2000).

Overall, the mixed findings of prior empirical studies show that opportunistic accruals earnings management is not a common practice among targets in M&A. However, these studies do examine accruals manipulation as a sole earnings management technique and ignore real-activities manipulation as an alternative option undertaken by targets simultaneously. As mentioned by Roychowdhury (2006) and Zang (2011), focusing on accruals earnings management exclusively may not fully explain earnings management behaviour.

## 7.2.2  Earning Management via Real-Activities

In addition to accruals earnings management, firms can manipulate reported earnings through real-activities (e.g., Cohen and Zarowin, 2010; Gunny, 2010; Zang,

2011; Roychowdhury et al., 2012). Real-activities manipulation, such as decreased investment in R&D, advertising, maintenance or employee training, involves departures from the normal course of operations and has direct cash flow consequences and greater negative effects on firms' future performance than accruals earnings management (Graham et al., 2005; Gunny, 2005; Zang, 2011).

Recent research provides evidence that firms use multiple earnings management strategies based on accruals and real-activities (e.g., Graham et al., 2005; Roychowdhury, 2006; Cohen and Zarowin, 2010; Zang, 2011), and more interestingly, managers prefer real activities manipulation over accruals earnings manipulation as a way to overstate reported earnings (Graham et al., 2005). For example, Roychowdhury (2006) finds evidence that managers use various forms of real-activity manipulation to avoid reporting losses. Specifically, he argues that managers are providing price discounts to temporarily increase sales, overproducing to report lower costs of goods sold, and reducing discretionary expenditure (such as R&D, advertising and selling, general and administrative expenditure) to report higher current earnings. Zang (2011) also finds evidence that managers use both earnings management techniques, accruals and real-activity manipulation, and argues that real-activity decision precedes the accruals manipulation decision.

Graham et al. (2005)'s survey evidence supports the view that managers engage in real-activity manipulation and their preference for real activity techniques as compared to accruals ones, which suggests the widespread usage of earnings management, especially the real-activity method. They document that:

> *"80% of interviewed executives state that, in order to meet an earnings target, they would decrease discretionary spending on R&D, advertising and maintenance. More than half (55%) report that they would delay starting a new project to meet an earnings target" (Graham et al., 2005, p. 32).*

There is mainly a twofold rationale for managers' greater willingness to manipulate earning through real-activities rather than through accruals. Firstly, accruals manipulation is more likely to draw scrutiny from auditors and regulators and potential litigation penalties than real-activities (e.g., Graham et al., 2005; Cohen and Zarowin, 2010; Zang, 2011; Roychowdhury et al., 2012).[88] In contrast, managers possibly prefer real-activity earnings management as it is easier to hide compared to accruals manipulation and detection of real operations is more "opaque" for investors than accruals manipulation. Unlike accruals choices which are often subject to accounting standards, there are no clear guidelines for real-activities (Roychowdhury et al., 2012). Managers may turn to real-activity manipulation as a response to increased litigation risk and outside scrutiny (Zang, 2011). In the same line of research, Cohen et al. (2008) claim that firms tend to switch to more real-activity earnings management, which is likely to be more costly for investors but harder to detect due to greater regulatory focus on accruals earnings management, such as Sarbanes-Oxley Act in 2002. Furthermore, real-activities are more within the domain of expertise of managers rather that investors and/or fiduciary agents as auditors (Roychowdhury et al., 2012).

Secondly, relying only on accruals manipulation to boost the stock price is too risky (Cohen and Zarowin, 2010) because of the limited flexibility to manage accruals and the timing of earnings management. Accruals management is constrained by the business operations and accrual manipulation in prior years (e.g., Barton and Simko, 2002). Thus, after all accruals earnings management methods used to meet earnings targets are exhausted if reported earnings fall below the desired threshold, managers have no options as real activities cannot be undertaken at or after the end of the fiscal

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[88] As mentioned before, in the UK the costs associated to auditors are perceived significant due to the high-quality audits the Big-X audit firms provide to listed companies (Maijoor and Vanstraelen, 2006), however in terms of the litigation-risk the company's directors are exposed to, the UK is a less litigious country than the US (Seetharaman et al., 2002).

reporting period. Therefore, managers are expected to engage in real-activity earnings management during the fiscal year (e.g., Roychowdhury, 2004; Gunny, 2010; Zang, 2011).

Given a greater relative opacity of real-activity manipulation, more recent empirical evidence suggests that at times of heightened scrutiny, such as M&A and in other settings, earnings management via accruals are unlikely to be a dominant source of overvaluation prior to takeovers (e.g., Cohen and Zarowin, 2010; Roychowdhury et al., 2012). The only two studies to date that examine real-activity earnings management in the SEO context are: Cohen and Zarowin (2010) and Roychowdhury et al. (2012). Cohen and Zarowin (2010) find that firms use both accruals earnings management and real-activity techniques around SEO, and the decline in post-SEO operating performance due to real-activities is more severe than that due to accruals earnings management. Consistent with Cohen and Zarowin (2010)'s findings, Roychowdhury et al. (2012) examine the simultaneous occurrence of accruals earnings management and real-activity earnings management around SEO years and find that managers' propensity to engage in real-activity manipulation in SEO years is higher than propensity for accruals earnings management. Furthermore, their results suggest that real-activity manipulation has more severe consequences in the long-run, in particular post-SEO stock under-performance is more closely related and predictably linked to real-activity earnings management.

To sum up, more recent research provides evidence that firms use multiple earnings management strategies based on accruals and real-activities simultaneously or sequentially and, more importantly, at times of heightened scrutiny such as M&A, earnings management via real-activities are more likely to be a dominant source of overvaluation (Roychowdhury et al., 2012).

Given these findings, this study focuses on both earnings management methods based on accruals and real-activity manipulation. Specifically, the simple and combined strategies of earnings management by targets are examined as the prediction is that targets are more likely to engage in both methods of earnings management simultaneously to overstate reported earnings. Thus the primary hypothesis of this study is as follows:

**H1**: Targets involved in M&A are more likely to use combined strategies of earnings management rather than simple strategies.

In the context of this thesis, the combined strategies of earnings management are defined as methods of earnings manipulation based on both accruals and real-activities simultaneously undertaken by targets prior to a takeover. Simple strategies of earnings management are techniques used by targets based on either accruals or real-activities.

Next, the relative prevalence of combined strategies of earnings management relative to simple strategies is analysed and the prediction is that targets engage more in combined strategies of earnings management rather than accruals manipulation or real-activity earnings management prior to M&A as a result of its greater opacity. This study does not only examine targets' managers' attempt to inflate earnings through both accruals earnings management and real-activity earnings manipulation, but also investigates whether earnings management takes place. Thus, the second hypothesis is as follows:

**H2:** Targets that undertake combined earnings management strategies, exhibit a higher positive pre-announcement stock return performance than those with simple strategies.

# 7.3 Data and Research Methodology

This section first presents the selection process of the samples used in this empirical chapter to test the research hypotheses and the sources of information used to obtained data. Next, the main research methods used to estimate discretionary accruals, abnormal R&D expenses metric and earnings surprise will be discussed in detail. Furthermore, this section presents the research design used to analyse simple and mixed earnings management strategies.

## 7.3.1 Data and Sample Selection

The initial sample used to test the research hypotheses in this chapter is identical to the pooled UK targets consisting of 257 target companies, which are UK publicly listed companies whose shares had traded on the LSE Main Market. This sample was obtained after a complex selection process presented previously in *Chapter 4 Data and Research Methods*. However, the actual sample size varies across the accruals and real-activities tests, as well as abnormal stock return tests, depending on the test procedure and the variables used in the empirical analysis.

The Datastream/Worldscope database was mainly used to obtain financial information necessary to estimate earnings surprises, abnormal accruals and abnormal R&D expenditure for each target in the pooled UK targets sample of 257 targets involved in completed mergers and acquisitions between 1990 and 2008, inclusive. Additional databases, such as the Thomson One Banker M&A database, the

Datastream/Worldscope database, the LSE website and the Nexis/Lexis academic database were used to collect financial and non-financial data for the sample targets. As mentioned before, the financial targets (SIC Codes 60-69) were excluded from the sample.

Abnormal accruals and earnings surprises were first estimated for all 257 targets from the pooled UK sample. Next, as not all the sample targets had invested in R&D, specifically 97 firms had missing data on this item, and were therefore excluded.[89] Consequently, abnormal R&D expenditure were estimated for 160 targets, and the merged sample using the abnormal accruals and abnormal R&D variables includes 160 targets prior to the M&A.

Data for firm stock return and the UK stock exchange main index were obtained from the Datastream database over the period 1990-2008. In order to minimize any potential survivorship bias and to preserve degrees of freedom, it was not required that all M&A firms must have all financial and stock return data available for a firm's inclusion in the sample. Given the elimination criteria and missing daily stock return data obtained from the Datastream database, abnormal stock return was determined for 69 targets.

To sum up, the pooled UK targets sample, consisting of 257 UK targets was used in this empirical study to estimate the proxies for accruals earnings management and earnings surprises. However, within this chapter the sample using the abnormal R&D variable includes 160 targets and the sample using the stock return variables consists of 69 targets. Table 7.1 reconciles the pooled targets and final samples.

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[89] For maximising the sample size, following prior literature R&D expenditure were set to zero if they were missing and SG&A was available (Roychowdhury, 2006; Cohen et al., 2008; Cohen and Zarowin, 2010).

**Table 7.1 Sample Construction: 160 UK-listed Targets with Abnormal Accruals, Earnings Surprises and Abnormal R&D Expenditure, and Final Sample of 69 Targets with Abnormal Stock Return**

|  | Number of firms |
|---|---|
| Total number of target firms from the Pooled UK targets sample | 257 |
| Less firms with missing R&D data | 97 |
| **Total firms with abnormal R&D expenditure** | **160** |
| Less firms with missing daily stock price data | 91 |
| **Total firms with abnormal stock return data** | **69** |

The distribution per industry and distribution per year of the targets sample are presented by Table 4.1 and Table 4.2 within *Chapter 4 Data and Research Methods.* Table 7.2 presents descriptive statistics for the main variables used in this empirical study. The results show that in terms of average profitability, size (market capitalisation), relative size and deal premium the results are similar to those for the pooled UK targets sample reported in *Chapter 4 Data and Research Methods.*

In addition, the average R&D intensity is 2% which is close to the level reported by the UK R&D Scoreboard (Department of Trade and Industry, 2003) of 2.5%, but significantly lower than the average R&D intensity for USA, Japan and the European Union of 5.2%, 4.3% and 3.7%, respectively.[90]

Unreported results for the sample show that targets' shareholders earn an average positive cumulative abnormal return of 23.83% for the five-day announcement period, 27.98% for the eleven-day announcement period, and 29.92% for the twenty one-day announcement period, respectively. These results are statistically significant and consistent with those reported for US (e.g., Bhagat et al., 2005; Bauguess et al., 2009) and UK targets by prior literature (e.g., Sudarsanam et al., 1996; Alexandridis et al., 2010; Croci and Petmezas, 2010).

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[90] These alarming statistics on the underinvestment in R&D by UK firms (compared to firms from USA, Japan and the European Union) led to the implementation of some measures designed to stimulate R&D activity by UK Government.

**Table 7.2 Descriptive Statistics for a Sample of 257 UK Listed Target Companies Involved in Completed M&A between 1 January, 1990 and 31 December, 2008**

| Variable | Obs | Mean | Std.Dev. | 10% | Median | 90% |
|---|---|---|---|---|---|---|
| Sales (£m) | 257 | 386.765 | 701.372 | 24.510 | 125.340 | 1081.530 |
| Assets (£m) | 257 | 339.885 | 640.539 | 19.990 | 94.420 | 955.600 |
| Market Capitalisation (£m) | 255 | 294.001 | 595.595 | 11.980 | 85.920 | 760.220 |
| Return on Assets (%) | 195 | 13.016 | 9.621 | 3.086 | 13.657 | 23.116 |
| R&D Intensity (%) | 160 | 1.972 | 5.120 | 0.000 | 0.000 | 5.520 |
| Relative size | 234 | 0.656 | 1.941 | 0.011 | 0.217 | 1.319 |
| Deal value (£m) | 256 | 413.837 | 878.920 | 15.200 | 97.535 | 1123.850 |
| 4-week Premium (%) | 257 | 39.626 | 43.042 | 0.000 | 37.390 | 82.540 |

**Note:** Sales, assets and market capitalisation are the target's net sales, total assets and market capitalisation the year before the deal is announced (Year 0). The corresponding Worldscope items are WC01001, WC02999, and WC08001 respectively. Return on Assets is computed as Earnings Before Interest, Tax, Amortisation and Depreciation (WC18198) at Year 0 over the Total Assets (WC02999). R&D Intensity is computed as R&D Expense (WC01201) over the Total Assets (WC02999). Relative size captures the size of the target relative to the acquirer and is defined as the ratio of the target's assets to the acquirer's assets the year before the deal announcement. Deal value is the total consideration paid for the target as reported in Thomson One Banker M&A. Four-week premium is the percentage of the closing price of the target four weeks before the announcement as reported in Thomson One Banker M&A.

## 7.3.2 Measuring Accruals Earnings Management

Following recent literature on earnings management in M&A (e.g., Louis, 2004; Ball and Shivakumar, 2008; Botsari and Meeks, 2008; Cohen and Zarowin, 2010; Roychowdhury et al., 2012), two cross-sectional accruals models, namely, the modified-Jones model (Dechow et al., 1995) and the performance-matched Jones model (Kothari et al., 2005), are used to estimated discretionary accruals in this empirical study. The second accruals model is used in this chapter due to its higher power of detection of earnings management and fewer misspecification problems.

The dependent variable in both models is total accruals and this measure is estimated using the cash flow approach to mitigate the measurement error problem (Hribar and Collins, 2002; Ball and Shivakumar, 2008). Specifically, following Botsari

and Meeks (2008), total accruals are computed as the difference between income before extraordinary items and discontinued operations, and cash from operations.

Abnormal accruals are computed as the difference between the actual accruals and the normal component of accruals i.e. estimated non-discretionary accruals. As mentioned before, following the literature, the normal level of accruals for each industry grouping/year portfolio (based on two-digit SIC code as in Cohen and Zarowin (2010)) with at least 6 observations is estimated using a control sample (e.g., DeFond and Jiambalvo, 1994; Subramanyam, 1996; Botsari and Meeks, 2008). The control sample consists of all UK publicly listed firms that have the necessary data on Datastream/Worldscope to estimate accruals, excluding the sample firms which have experienced a takeover event. Abnormal accruals are estimated for event years -2, -1, and 0, that is, the three years preceding a takeover, which are most likely to affect stock price performance.[91]

As the empirical results of this study are generally similar across these two models, only the results derived from the cross-sectional modified Jones model (Dechow et al., 1995) are reported here. Based on the previous papers on earnings management in M&A, this study investigates whether the average abnormal accruals are significantly positive for UK targets in the three years preceding a takeover.

As a robustness test, this analysis is repeated by using a measure based on the performance-matched abnormal accruals as advanced in Kothari et al. (2005). As suggested by Kothari et al. (2005), to estimate this additional measure of discretionary accruals, first each M&A firm-year observation is matched with a non-M&A firm-year observation from the same industry groupings based on 2-digit SIC code and year with the closest value of lagged return on assets (+/-20% of sample firm's return on assets).

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[91] Year 0 (-1 and -2) is the first (second and third) year with an earnings release preceding the announcement of the deal. All variables are trimmed at 1% and 99% to mitigate influential observations.

Then, discretionary accruals for both an M&A firm and a non-M&A firm are computed. Finally, the discretionary accruals for an M&A firm are adjusted by the discretionary accruals for its matched firm.

### 7.3.3 Measuring Real-Activities Earnings Management

This study focuses on abnormal reduction in R&D expenses as a proxy for real-activity earnings management. R&D expenditure are incurred as a result of a corporate strategic objective to enhance performance and competitive advantage, but accounting standards require that they be expensed as incurred.[92] An opportunistic reduction in R&D expenditure leads to higher reported earnings and cash flow from operations. Several empirical studies provide evidence that managers cut discretionary R&D spending to increase reported earnings (e.g., Baber et al., 1991; Bushee, 1998; Cheng, 2004; Roychowdhury, 2006; Osma, 2008; Osma and Young, 2009; Cohen and Zarowin, 2010; Roychowdhury et al., 2012).

For example in the US, Baber et al. (1991), Bushee (1998) and Cheng (2004) find evidence of managers pruning R&D expenditure to meet short-term earnings targets. More recent research reports evidence of a reduction in discretionary expenditure (including R&D spending) to improve current earnings and develops empirical measures to proxy for real-activity manipulation of discretionary R&D expenditure (Roychowdhury, 2006; Cohen and Zarowin, 2010; Zang, 2011; Roychowdhury et al., 2012). In the same line of research, Osma (2008) and Osma and

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[92] Before 2005, when IFRS adoption was required in the UK for publicly listed companies, accounting for R&D was subject to Statement of Standard Accounting Practice No. 13 (SSAP 13 Revised). SSAP 13 Revised permitted managers of UK firms either to expense all R&D as incurred or to capitalise development expenditure when certain feasibility and viability conditions were met.

Young (2009) find evidence of opportunistic R&D cuts in UK firms motivated by short-term earnings pressures.

In this study, abnormal reduction in R&D expenses is the only proxy used to estimate real-activity earnings management. There are two main motivations for this choice. Firstly, compared to other measures of real-activity earnings management, such as abnormal CFO which is used as a proxy for sales manipulation, abnormal R&D expenses measure is better due to its ability to capture the direct effect of this real-activity (Gunny, 2010). Secondly, in terms of the estimation methodology, recent literature on real-activity earnings management has developed a panel data model which allows the estimation of a more refined measure of abnormal R&D expenses (Roychowdhury et al., 2012).

Following Roychowdhury et al. (2012), a fixed effects panel data model adjusted for firm-specific and time-period-specific effects is used to estimate abnormal R&D expenditure in this study.[93] This model was discussed in detail in *Chapter 3 Definitions, Strategies and Consequences of Earnings management.* The main reason why the panel methodology is used in this research is that it allows controlling for unobservable heterogeneity (firm-specific effect) to obtain consistent estimates for regression parameters.[94] Firms are heterogeneous and as a result, there are always characteristics that are difficult to measure or data that are impossible to obtain which leads to biased results. For example, attributes of managers, such as motivation and ability or internal accounting policies vary across firms, but are assumed to be time-invariant for each firm. Therefore, a fixed effects panel data model is adopted to control for the impact of

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[93] The Hausman specification test is conducted to choose between fixed-effects and random-effects models as an alternative panel data approach.

[94] In this study, a panel dataset that have both cross-sectional and time variation is used (Cameron and Trivedi, 2009). As each time period of data is not independent of previous ones, model errors are very likely correlated (correlation over time or across individuals). Therefore, standard errors of panel-data estimators need to be adjusted (Cameron and Trivedi, 2009). Furthermore, in fixed-effect models, regressors may be correlated with the individual level effects (limited form of endogeneity), so that the consistent estimation of regression parameters requires controlling for fixed effects.

independent variables on the estimated coefficients which is caused by variables not entered into the model, but acknowledged to be part of the firm heterogeneity. By including the individual effect into the regression (unobservable firm characteristics), fixed-effects models mitigate the omitted variable problem by capturing unobservable firm characteristics, such as managers' abilities or firms' accounting policies (Wooldridge, 2002).

## 7.3.4 Measuring Earnings Surprise

Earnings surprise is incorporated in this analysis to capture whether targets report earnings higher than their normal ones prior to M&A. Similar to R&D, a fixed-effect panel data model is used to estimate earnings surprise, specifically abnormal return-on-assets (ROA). Following Roychowdhury et al. (2012) a time-series model of earnings is used as follows:

$$ROA_{it} = \propto_{roa\,i} + \beta_{roa} * ROA_{it-1} + \sum_{\tau=1}^{T} \vartheta_\tau * Time(\tau) + \varepsilon_{roa\,it} \qquad (7.1)$$

Where:

$ROA_{it}$ = the value of the ROA series to be modelled for firm i at time period t;

$ROA_{it-1}$ = the lagged value of ROA series for firm i at time period t-1;

$Time(\tau)$ = indicator variable that is equal to 1 if year is $\tau$ and 0 otherwise;

$\vartheta_\tau$ = the economy-wide mean of the ROA series in a given year $\tau$;

$\propto_{roa\,i}$ = the firm-specific constant capturing individual specific effects;

$\beta_{roa}$ = the first-order autoregressive coefficient depicting the persistence of the ROA series.

Equation (7.1) indicates that the normal value of ROA depends on a firm-specific effect ($\propto_{roa\,i}$), the value of ROA in the previous period and the economy-wide mean of the series in a given year ($\vartheta_\tau$). The coefficient $\propto_{rd\,i}$ is the firm-specific level which captures the individual fixed effects, and $\beta_{roa}$ is the first-autoregressive coefficient which depicts the persistence of ROA series.

Compared to cross-sectional estimation, the main advantage of this panel data fixed-effects estimation technique is that it allows for data from beyond the M&A event to be incorporated in the measurement of earnings management at the time of the deal. When cross-sectional estimation is deployed there may not be enough data available at the time of the deal to detect real activities that are departures from the firm's normal operations. In addition, this estimation technique corrects for any model misspecification issues that would improperly classify firms exhibiting unusually high (or low) R&D due to their business environment and/or their nature. These factors are likely to induce significant autocorrelation especially in the proxies of real-activity earnings management. For example, the first-order autocorrelation in abnormal R&D and abnormal ROA in the sample is 0.44 and 0.19 respectively. Unlike cross-sectional OLS regression models where the firm fixed-effect is incorporated in the forecast error, the proxy for abnormal R&D does not include this firm fixed-effect. Therefore, the conclusions based on the model are biased towards not finding support for the hypothesis of this study.

## 7.3.5 Measuring Short-Term Abnormal Returns

Following a large prior literature on targets' abnormal return (e.g., Huang and Walkling, 1987; Schwert, 1996; Sudarsanam et al., 1996; Davidson and Cheng, 1997;

Bhagat et al., 2005), the market model is used to estimate the short-term abnormal stock price performance for targets. Using daily returns over a period of a 200-day interval (-240,-41) (about a year in trading days) before the announcement date as the estimation period, the market model regressions are performed to predict the normal return (NR) for security j:[95]

$$NR_{jt} = \alpha_j + \beta_j * R_{mt} + \varepsilon_{jt} \qquad (7.2)$$

Where:

$NR_{jt}$ = the daily normal rate of return index on security j over day t (provided by the Datastream database);

$R_{mt}$ = the daily rate of return index on market portfolio over day t (the Datastream UK Total Market index is used as market proxy);

$\varepsilon_{jt}$ = the error term for security j at day t.

The coefficients $\alpha_j$ and $\beta_j$ are the OLS parameter estimates of the intercept and slope, respectively, for security j. The abnormal return (AR) or predicted error for security j at time t is calculated as the difference between actual observations and estimated (normal) returns:

$$AR_{jt} = R_{jt} - NR_{jt} \qquad (7.3)$$

The estimation window is from trading day $t - 240$ through trading day $t - 41$, with respect to the initial acquisition announcement day (day 0).

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[95] The choice of using daily return data in this study was caused by the increased power of significance tests of the null hypothesis that the zero pre-announcement average abnormal returns, prior literature documents that the ability to statistically identify the effect of an M&A event is higher for a shorter sampling period, such as daily and monthly intervals (Campbell, 1997). In this study, days are stock market trading days, not calendar ones.

Cumulative abnormal returns (CAR) over the announcement period summarise percentage price changes over the five-day period:

$$CAR(-2, +2) = \sum_{t=-2}^{+2} AR_{jt} \tag{7.4}$$

Where:

$AR_{jt}$ = the estimated abnormal return on security j over day t.

Within prior studies on targets' abnormal return, the event window generally ranges between three days and a month of deal announcement (Sudarsanam, 2003). Therefore, the research hypotheses in this study are also tested by using an event window of eleven-days ($CAR(-5, +5)$) and twenty-one-days ($CAR(-10, +10)$) and the results are qualitatively the same. Following the event study methodology outlined by Campbell (1997), the event period is not included in the estimation period to prevent the event from influencing the normal return model parameter estimates.

The average cumulative abnormal returns over a five-day window (CAR(-2,+2)), eleven-day window (CAR(-5,+5)) and twenty-one-day window (CAR(-10,+10)) are reported for the three earnings management groups. The twenty-one-day window covers approximately a calendar month which is less than the sixty-day deadline for unconditional deals in the UK.[96] The statistical significance of CAR is assessed by using

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[96] Under the City Takeover Code rules, the UK public companies must post their offer document within 28 days of announcement of the bid. However, the posting is more often done sooner especially in cash offers and most bids go unconditional well before 60 day period. Furthermore, the bidders are not allowed to vary the terms of their offer after day 46 of the bid period. Given the risk of excluding more firms with missing stock return data, a trade-off between the estimation period length and the remaining sample is made by using the stock return variable and, therefore shorter event windows of 5, 11 and 21 days are used in this study.

the t-statistic (*t*-stat) and the Wilcoxon signed-rank test statistic (*z*-stat) which accounts for event-induced changes in return variance.[97]

## 7.3.6 Research Design

The key feature of this study is that it allows for the possibility that firms engaging in earnings management may do so via both accruals and real-activities. Therefore, managers can use both strategies of earnings management, accruals earnings management (AEM) and real-activity earnings management (REM) individually or simultaneously and, further, real-activity earnings management can have accruals consequences (e.g., Roychowdhury et al., 2012).

To test the research hypotheses, following Roychowdhury et al. (2012), the sample firms are sorted independently based on the signs of abnormal R&D, abnormal accruals and earnings surprises (specifically, the surprise in ROA) in the years prior to M&A transaction (years 0, -1 and -2).[98] This partitioning allows segregating income-increasing earnings management firms by the strategy they might have used to manipulate earnings. In addition, sorting based on the sign of earnings surprises is used to increase the power of capturing earnings management undertaken to overstate reported earnings. The eight partitions obtained in this study are presented below:

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[97] Unlike the constant-mean-return model, the main advantage of the market model is that the variance of returns is reduced by removing the portion of the return that is related to variation in the market's return. However, prior studies have raised concerns that the simple t-statistic used in short-horizon event studies to test the null hypothesis that the average abnormal return is zero may be biased as they ignore cross-sectional variation in true abnormal return (e.g., Boehmer et al., 1991; Higgins and Peterson, 1998; Harrington and Shrider, 2007). Therefore, following the literature this study alternatively uses a non-parametric test statistic (Wilcoxon signed-rank test) to check the robustness of the conclusions based on t-test as the nonparametric rank test provides more reliable inferences than the standard parametric tests (Campbell, 1997).

[98] Prior studies have also examined earnings management, especially accruals manipulation, in the last three years prior to M&A (e.g., Botsari and Meeks, 2008).

**Group 1: AEM**
*ROA Surprise > 0, Abnormal R&D > 0* and *Abnormal Accruals > 0*

**Group 2: AEM+REM**
*ROA Surprise > 0, Abnormal R&D < 0* and *Abnormal Accruals > 0*

**Group 3: REM**
*ROA Surprise > 0, Abnormal R&D < 0* and *Abnormal Accruals < 0*

**Group 4**
*ROA Surprise > 0, Abnormal R&D > 0* and *Abnormal Accrual < 0*

**Group 5**
*ROA Surprise < 0, Abnormal R&D > 0* and *Abnormal Accruals > 0*

**Group 6**
*ROA Surprise < 0, Abnormal R&D < 0* and *Abnormal Accruals > 0*

**Group 7**
*ROA Surprise < 0, Abnormal R&D < 0* and *Abnormal Accruals < 0*

**Group 8**
*ROA Surprise < 0, Abnormal R&D > 0* and *Abnormal Accrual < 0*

This empirical analysis focuses only on income-increasing earnings management targets, in particular Groups 1, 2 and 3 firms that exhibit a positive earnings surprise in years prior to M&A, with unusually high accruals and/or unusually low R&D. Only Groups 1, 3 and 2 are of highest interest to this study as they include firms that might have undertaken accruals earnings management and real-activity earnings management or both simultaneously to mislead investors.[99] Group 1 includes firms that exhibit high positive earnings surprises and high accruals, without reporting unusually low R&D. In contrast, firms in Group 3 report positive earnings surprises, unusually low R&D and unusually low accruals. Thus, Group 1 is more likely to have overstated earnings through accruals solely (AEM), while group 3 is likely to have done so by reducing

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[99] The remaining groups consist of firms (which are not of any interest in this study) that are more likely to capture firms that have undertaken income-decreasing earnings management with the intent of understating earnings or "cleaning" up their financial statements.

R&D spending (REM). Group 2 firms exhibit positive earnings surprises along with unusually high accruals and low R&D, which means that they are likely to have engaged in both types of earnings management (AEM+REM).

In an additional analysis, the prevalence of firms in Groups 1, 2 and 3 is examined in the years prior to M&A (year 0, -1 and -2) relative to the remaining years. Specifically, this study examines whether the frequency of firms in these three groups is significantly different in the years prior to M&A relative to the remaining years. If managers have engaged in either income-increasing accruals earnings management and/or real-activity earnings management, then the frequency of firms in groups 1, 2 and 3 should be higher in the years prior to M&A (year 0, -1 and -2) relative to the remaining years.

# 7.4 Empirical results

This section first provides the results of the accruals tests and panel data tests undertaken to estimate accruals and real-activity earnings management. Then the results of the analysis examining the prevalence of the earnings management strategies will be discussed. Finally, the results of the stock price performance analysis will also be presented and discussed in detail within this section.

## 7.4.1 Results of Accruals and Fixed-Effects Panel Data Tests

First the models for accruals, R&D intensity and ROA are estimated to predict expected levels, then the abnormal ("unexpected") levels of residuals are obtained. As

mentioned before, following the literature, the normal level of accruals is estimated for each industry grouping/year portfolio using a control sample (DeFond and Jiambalvo, 1994; Subramanyam, 1996; Botsari and Meeks, 2008) and the industry grouping/event year parameter estimates are subsequently combined with firm-specific data to generate estimated prediction errors that represent the level of abnormal accruals for each firm.

Next, the fixed-effects models for ROA and R&D intensity are estimated. The choice of this panel data approach was made as the Hausman test statistic is statistically significant, so that the fixed-effects model is appropriate. Following Roychowdhury et al. (2012), the expected levels of ROA and R&D intensity are predicted and then their "unexpected" levels are obtained, which are deviations of the actual values of the series from the value that would have been expected based on the firm's past values of the series.

Table 7.3 presents the results for R&D intensity and ROA after using the fixed-effects regression equations. The results show that ROA and R&D series exhibit significant amounts of persistence, much higher for R&D than ROA series: 0.44 and 0.19, respectively. Panel A, B and C of Table 7.4 report the average values of abnormal R&D expenditure and abnormal accruals for the three earnings management groups by M&A years (the years 0, -1 and -2). The results of the analysis per group and M&A years show that Group 1, Group 3 and Group 2 firms (which were identified as most likely to use income-increasing earnings management) have engaged in earnings management to overstate earnings through either accruals, real-activity or both, so they exhibit significantly positive ROA surprises, significantly negative/positive abnormal R&D and significantly positive/negative abnormal accruals in the years 0, -1 and -2.

**Table 7.3 Fixed Effects Autoregressive Panel Data Forecast Models**

|  | R&D Equation: | ROA Equation: |
|---|---|---|
| $\propto$ | **0.443\*\*\*** | **0.197\*\*\*** |
|  | (0.152) | (0.0505) |
| $\beta$ | -0.000225 |  |
|  | (0.000970) |  |
|  |  |  |
| Observations | 1381 | 1592 |
| F-statistic | 3.998 | 33.40 |

**Note:** This table presents the results of estimating forecast models for ROA and R&D expenditure. Standard errors are in parentheses. \*\*\*, \*\* and \* indicate 1%, 5% and 10% level of significance, respectively.

<u>R&D Equation:</u> $R\&D_{it} = \propto_{rd\,i} + \beta_{rd} * R\&D_{it-1} + \gamma_{sales} * Sales_{it-1} + \sum_{\tau=1}^{T} \vartheta_\tau * Time(\tau) + \varepsilon_{rd\,it}$
<u>ROA Equation:</u> $ROA_{it} = \propto_{roa\,i} + \beta_{roa} * ROA_{it-1} + \sum \vartheta_\tau * Time(\tau) + \varepsilon_{roa\,it}$

For example, in year 0 Group 1 firms with a higher likelihood of accruals earnings management exhibit, on average, positive abnormal accruals (0.0821, p<0.001), and positive R&D, which is consistent with the prediction in this research. Group 2 firms, on average, also tend to have negative abnormal R&D (-0.0016, p=0.005) and positive abnormal accruals (0.0503, p=0.001) which indicates that firms in Group 2 are likely to have overstated earnings through both accruals and real-activities simultaneously. Finally, firms in Group 3 that are more likely to have used real-activity earnings management to increase current earnings experience, on average, negative abnormal R&D (-0.0042, p<0.005) and negative abnormal accruals. The results for these three groups in the years -1 and -2 are similar, they are all statistically significant in the years 0, -1, and -2 (except for Group 3 abnormal R&D in year -2) and consistent with prior research (Roychowdhury et al., 2012).[100]

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[100] This analysis is repeated after using an alternative proxy for abnormal accruals, that is the performance-matched abnormal accruals (as advanced in Kothari et al. (2005)), and the qualitative results are robust to this modification. The results also hold when abnormal accruals measure is estimated using median regression (instead of OLS), suggesting that it is unlikely that the results are driven by outliers.

## Table 7.4 Characteristics of the Groups

**Panel A Year 0**

| Groups Based on Earnings Surprise, Abnormal R&D, and Abnormal Accruals | N | ab_ROA | ab_rd | ab_accr |
|---|---|---|---|---|
| **Group 1: AEM** | 16 | **0.0158** | **0.0060** | **0.0821** |
| | | (0.0168) | (0.0198) | (0.0001) |
| **Group 2: AEM +REM** | 37 | **0.0370** | **-0.0016** | **0.0503** |
| | | (0.0000) | (0.0034) | (0.0000) |
| **Group 3: REM** | 37 | **0.0500** | -0.0042 | **-0.0656** |
| | | (0.0001) | (0.0702) | (0.0000) |

**Panel B Year -1**

| Groups Based on Earnings Surprise, R&D Surprise, and Abnormal Accruals | N | ab_ROA | ab_rd | ab_accr |
|---|---|---|---|---|
| **Group 1: AEM** | 14 | **0.0283** | **0.0062** | **0.0469** |
| | | (0.0000) | (0.0139) | (0.0000) |
| **Group 2: AEM +REM** | 48 | **0.0262** | **-0.0018** | **0.0541** |
| | | (0.0000) | (0.0017) | (0.0000) |
| **Group 3: REM** | 21 | **0.0333** | **-0.0008** | **-0.0521** |
| | | (0.0000) | (0.0005) | (0.0002) |

**Panel C Year -2**

| Groups Based on Earnings Surprise, R&D Surprise, and Abnormal Accruals | N | ab_ROA | ab_rd | ab_accr |
|---|---|---|---|---|
| **Group 1: AEM** | 23 | **0.0340** | **0.0020** | **0.0512** |
| | | (0.0000) | (0.0064) | (0.0000) |
| **Group 2: AEM +REM** | 28 | **0.0344** | **-0.0012** | **0.0835** |
| | | (0.0000) | (0.0014) | (0.0028) |
| **Group 3: REM** | 28 | **0.0386** | -0.0033 | **-0.0610** |
| | | (0.0000) | (0.2421) | (0.0085) |

**Note**: This table presents the values of the earnings surprise, the abnormal R&D and abnormal accruals for the firms in the three groups in Year 0, -1 and -2. Year 0 (-1 and -2) is the first (second and third) year with an earnings release preceding the announcement of the deal. Significance is based on t-tests for means tests. Significant results are marked in bold and the corresponding *p*-values are given below in brackets.

**Variable definitions**: ROA surprise $= ab\_ROA_{i\tau} = ROA_{i\tau} - \widehat{ROA}_{i\tau/i\tau-1}$, $ab\_rd_{i\tau} = rd_{i\tau} - \widehat{rd}_{i\tau/i\tau-1}$, and abnormal accruals (ab_accr) is a measure of abnormal accruals computed from the modified-Jones model (Dechow et al., 1995).

Groups 1 to 3 are classified based on Earnings Surprise, Abnormal R&D and Abnormal Accruals, as follows:

a) Group 1 AEM are targets that might have undertaken accruals earnings management solely, specifically targets with $ab\_ROA_{i\tau} > 0$, $ab\_rd_{i\tau} > 0$, $ab\_accr_{i\tau} > 0$;

b) Group 2 AEM +REM are targets that might have undertaken combined earnings management strategies based on accruals earnings management and real-activity earnings management simultaneously, specifically targets with $ab\_ROA_{i\tau} > 0$, $ab\_rd_{i\tau} < 0$, $ab\_accr_{i\tau} > 0$;

**c)** Group 3 REM are targets that might have undertaken real-activity earnings management solely, specifically targets with $ab\_ROA_{i\tau} > 0$, $ab\_rd_{i\tau} < 0$, $ab\_accr_{i\tau} < 0$.

More importantly, in terms of the strategies of earnings management employed prior to M&A, there are totally 53 firms (16+14+23) and 86 firms (37+21+28) in Group 1 (AEM) and Group 3 (REM), respectively, which were identified as most likely to use simple strategies of earnings management, compared to 113 firms (37+48+28) in Group 2 (AEM+REM) with a higher likelihood of combined strategies of earnings management. The results are quite similar across the years 0, -1, and -2, in particular the number of firms in Group 2 (AEM+REM) exceeds that of firms in Group 1 (AEM) and Group 3 (REM). However, the number of firms in Group 2 (AEM+REM) firms is equal to that of firms in Group 3 (REM), but higher than that of firms in Group 1 (AEM) in the years 0 and -2. Overall, these results are consistent with hypothesis H1 that targets are more likely to use combined strategies of earnings management rather than simple strategies.

## 7.4.2 The prevalence of Earnings Management Strategies prior to M&A

Table 7.5 reports the relative proportion of firm-years for each of the three groups that experience a transaction and firm-years that do not. Following Roychowdhury et al. (2012), the firms across *non-M&A periods* (the years lower than -2) are used as the "typical" benchmark. This "typical" benchmark allows capturing any changes in group proportions from *non-M&A periods* to *M&A periods* (the years 0, -1 and -2) as a result of departures from the firms' normal operations and accruals process.

**Table 7.5 The Prevalence of Income-Increasing Earnings Management at the Time of M&A: Manipulation of Accruals and Manipulation of Real-Activities**

| Proportion of Firms by Earnings Surprise, Abnormal R&D and Abnormal Accruals | % in the Prior Years N= 320 | % in the Year -2 N= 79 | % in the Year -1 N= 83 | % in the Year 0 N= 90 | Change in % Year-2/Prior Years | Change in % Year -1/Prior Years | Change in % Year 0/Prior Years |
|---|---|---|---|---|---|---|---|
| Group 1: AEM | 47.18 | 29.12 | 16.87 | 17.78 | **-18.06** (0.0037) | **-30.31** (0.0000) | **-29.40** (0.0000) |
| Group 2: AEM+REM | 28.13 | 35.44 | 57.83 | 41.11 | 7.31 (0.2023) | **29.70** (0.0000) | **12.98** (0.0186) |
| Group 3: REM | 24.69 | 35.44 | 25.3 | 41.11 | **10.75** (0.0534) | 0.61 (0.9087) | **16.42** (0.0022) |
| Total | 100 | 100 | 100 | 100 | | | |

**Note:** This table presents proportion of M&A firms falling in each of the three groups based on Earnings Surprise, Abnormal R&D and Abnormal Accruals groupings during the M&A years (Year 0, -1, and -2) and during the non-M&A years (years prior to Year -2). Significance is based on t-tests for means tests. Significant results are marked in bold and the corresponding *p*-values are given next in brackets.

**Variable definitions**: ROA surprise $= ab\_ROA_{i\tau} = ROA_{i\tau} - \widehat{ROA}_{i\tau/i\tau-1}$, $ab\_rd_{i\tau} = rd_{i\tau} - \widehat{rd}_{i\tau/i\tau-1}$, and abnormal accruals (ab_accr) is a measure of abnormal accruals computed from the modified-Jones model (Dechow et al., 1995).

Groups 1 to 3 are classified based on Earnings Surprise, Abnormal R&D, and Abnormal Accruals, as follows:

a) Group 1 AEM targets that might have undertaken accruals earnings management, specifically targets with $ab\_ROA_{i\tau} > 0$, $ab\_rd_{i\tau} > 0$, $ab\_accr_{i\tau} > 0$;

b) Group 2 AEM +REM are targets that might have undertaken combined earnings management strategies based on accruals earnings management and real-activity earnings management simultaneously, specifically targets with $ab\_ROA_{i\tau} > 0$, $ab\_rd_{i\tau} < 0$, $ab\_accr_{i\tau} > 0$;

c) Group 3 REM are targets that might have undertaken real-activity earnings management solely, specifically targets with $ab\_ROA_{i\tau} > 0$, $ab\_rd_{i\tau} < 0$, $ab\_accr_{i\tau} < 0$.

In the year 0, 41.11% of the sample firms fall into Group 2 (AEM+REM) which are firms reporting positive ROA surprises, negative abnormal R&D expenditure and positive abnormal accruals. This proportion is significantly higher than in the non-M&A periods, in particular 28.13%.

The results for the years -1 and -2 show that there was an overall increasing trend throughout the non-M&A periods and M&A periods from 28.13% to 35.44%, 57.83% and 41.11%, respectively. These results also indicate that an increased number of targets manage earnings prior to M&A through a simultaneous reduction in R&D expenditure and an increase in abnormal accruals. Group 3 (REM), specifically firms with positive ROA surprises and negative abnormal R&D expenditure, but negative abnormal accruals, also exhibits a significant increase in proportions of firms across the non-M&A periods and M&A periods, from 24.69% to 41.11%.

In contrast, Group 1 (AEM) accruals earnings management firms exhibits a decreasing trend across periods other than the prior M&A periods and the prior M&A periods. Most of the results are statistically significant in the years -1 and 0. To sum up, these results show that Group 2 (AEM+REM) and Group 3 (REM) firms exhibit an overall higher prevalence compared to Group 1 (AEM) which supports the hypothesis H1 in this study. These results are consistent with those reported in prior research (Roychowdhury et al., 2012) for SEO firms.

## 7.4.3 Targets' Pre-Announcement Stock Price Performance

Consistent with the capital market efficiency, if earnings manipulation is transparent to investors and stocks are priced adequately prior to the acquisition announcement, current abnormal returns should not be statistically distinguishable from

zero. However, if the markets do not fully impound the effect of earnings manipulation prior to the acquisition announcement and the effects are realised over subsequent periods, firms engaging in earnings management exhibit positive abnormal returns. In this study, Groups 1, 2 and 3 are identified as having engaged in income-increasing earnings management based on their positive ROA surprises, negative/positive abnormal R&D and positive/negative abnormal accruals, therefore the prediction is that their pre-announcement abnormal returns should be statistically different than zero.

To test the second hypothesis of this study, the market abnormal returns and the cumulative abnormal returns are calculated for the three groups based on earnings surprise, abnormal R&D and abnormal accruals over a five-day window (-2,+2), eleven-day window (-5,+5) and twenty-one-day window (-10,+10).[101] The market model is estimated using daily returns over a period of 200-day interval (-240,-41) before the announcement date. This study focuses on abnormal returns for targets in groups 1, 2 and 3.

Figure 7.1 shows the plot of the cumulative average abnormal returns (CARs) from 10 trading days before the announcement (day 0) through to 10 trading days after the announcement. It breaks down the targets' returns by Groups 1, 2 and 3. The results show that, in general, the CARs start to rise significantly around day -5 with the largest pre-announcement rise occurring from days -2 to -1 or +1 (one day later especially for Group 2: AEM +REM) due to deal anticipation. On the day 0 the CARs are about 24% for Group 1: AEM firms, 26% for Group 3: REM firms and 30% for Group 2: AEM +REM, respectively. This suggests that all three groups firms exhibit positive CARs of over 25% prior to the announcement date, but more importantly that

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[101] Abnormal returns are generally calculated using a five-day window (-2,+2) in prior literature. However, in this study wider windows of eleven days and twenty-one days are also used to control for potential differences in information leakage or/and in the speed of adjustments of prices to news among the three earnings management groups (Alexandridis et al., 2010).

Group 2: AEM +REM reports the highest CARs. After the announcement date, the CARs for all three groups, in general, are flat, which is consistent with the pattern identified by prior literature on targets' stock market performance prior to the announcement date (e.g., Schwert, 1996; Sudarsanam et al., 1996).
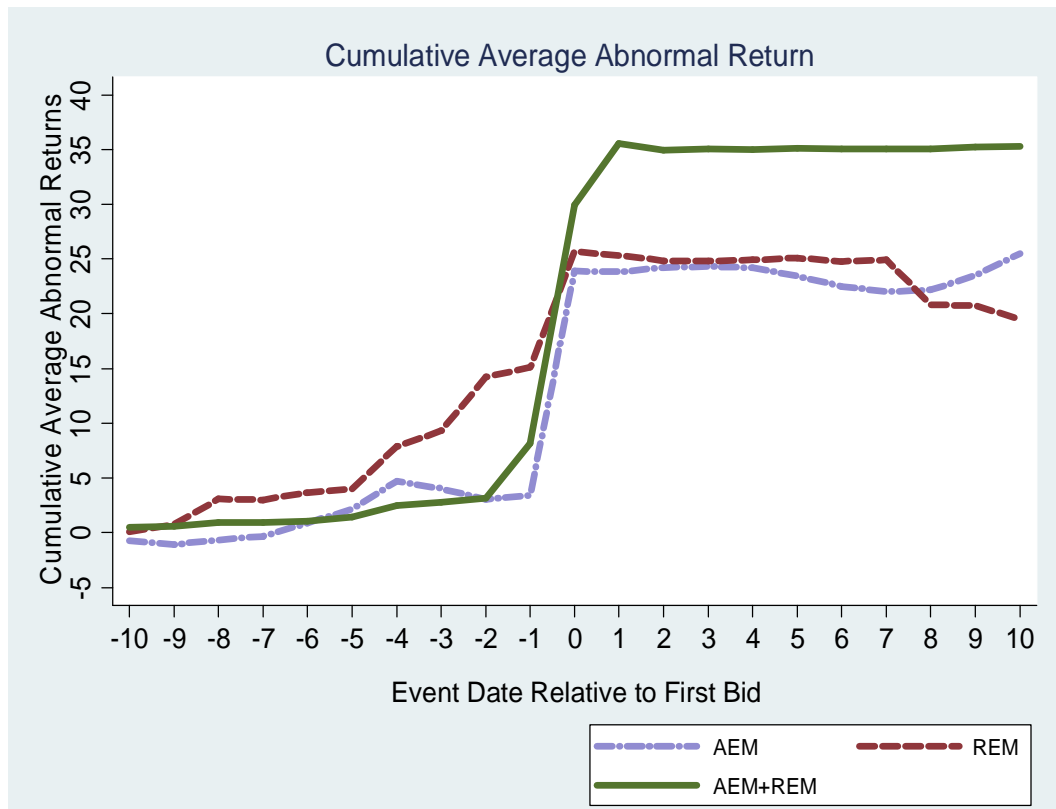


**Figure 7.1 Cumulative Average Abnormal Return to Targets' Stocks by Firms Group Based on Earnings Surprise, Abnormal R&D and Abnormal Accruals at the Time of a Deal from Trading Day -10 to +10 relative to the Announcement Date for UK Targets in the Period 1990-2008**

The visual evidence in Figure 7.1 supports the second hypothesis H2 that targets which undertake combined earnings management strategies (AEM +REM) exhibit a higher positive pre-announcement stock return performance than those with simple strategies based solely on either accruals or real-activities. However, the results presented in Table 7.6 show that only the pre-announcement cumulative abnormal

return for Group 1 AEM is statistically different than that for Group 3 REM before the deal announcement date[102].

Table 7.7 presents average cumulative abnormal returns for the three groups. Consistent with the second hypotheses H2, Groups 1, 2 and 3 which have engaged in income-increasing earnings management through either accruals, real-activity or both at the time of a deal, experience significantly positive mean (median) cumulative abnormal returns (regardless of the event window used in estimation) ranging between 15.56% (13.93%) and 35.32% (25.51%) in the pre-announcement period. Among these three groups, Group 2 (AEM+REM) which includes firms reporting positive ROA surprises, negative abnormal R&D expenditure and positive abnormal accruals, has the highest mean (median) abnormal return of over 32% (22.03%). These results provide further evidence in favour of the second hypothesis of this study.

To sum up, the visual evidence and abnormal stock return-tests confirm that Groups 1, 2 and 3 firms with positive earnings surprises and abnormally low/high R&D and high/low accruals exhibit consistent positive abnormal returns in the pre-announcement period, irrespective of the length of the event window. In addition, targets from Group 2 AEM +REM that undertake combined earnings management strategies appear to be the most overvalued prior to M&A.

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[102] The comparative analysis of pre-announcement cumulative abnormal return was repeated for an alternative classification of earnings management strategies into REM and NON-REM groupings and the results show that, on average, CARs are lower positive for NON-REM firms (these grouping included the firms with accruals earnings management and combined earnings management) than REM prior to the deal announcement and higher afterwards; however there are no statistically significant differences between these two groupings during the whole period.

**Table 7.6 Cumulative Average Abnormal Return to Targets' Stocks by Firms Group at the Time of a Deal from Trading Day -10 to +10 relative to the Announcement Date**

| Event Day Relative to the Deal | Groups Based on Earnings Surprise, Abnormal R&D and Abnormal Accruals | | | Differences in Means | | |
|---|---|---|---|---|---|---|
| | Group 1: AEM | Group 2: AEM +REM | Group 3: REM | AEM/AEM +REM | AEM /REM | AEM +REM/REM |
| -10 | -0.72 | 0.54 | 0.08 | -1.26 (0.1557) | **-0.80** (0.0000) | 0.46 (0.5753) |
| -9 | -1.07 | 0.60 | 0.77 | -1.67 (0.2344) | -1.84 (0.0000) | -0.16 (0.8943) |
| -8 | -0.63 | 0.96 | 3.09 | -1.58 (0.3418) | **-3.72** (0.0000) | -2.14 (0.3801) |
| -7 | -0.32 | 0.95 | 3.00 | -1.27 (0.4754) | **-3.32** (0.0000) | -2.06 (0.3770) |
| -6 | 0.89 | 1.07 | 3.69 | -0.18 (0.9341) | **-2.80** (0.0000) | -2.62 (0.3890) |
| -5 | 2.16 | 1.45 | 3.99 | 0.71 (0.8110) | **-1.83** (0.0002) | -2.54 (0.4235) |
| -4 | 4.73 | 2.46 | 7.89 | 2.27 (0.6933) | **-3.15** (0.0814) | -5.42 (0.2815) |
| -3 | 4.04 | 2.79 | 9.29 | 1.25 (0.8120) | **-5.25** (0.0449) | -6.51 (0.2279) |
| -2 | 3.06 | 3.18 | 14.22 | -0.12 (0.9829) | **-11.16** (0.0404) | **-11.04** (0.0569) |
| -1 | 3.45 | 8.16 | 15.11 | -4.71 (0.4424) | **-11.66** (0.0442) | -6.95 (0.2875) |
| 0 | 23.89 | 29.92 | 25.69 | -6.03 (0.5858) | -1.81 (0.3608) | 4.23 (0.6364) |
| 1 | 23.81 | 35.51 | 25.31 | -11.69 (0.3362) | -1.49 (0.3852) | 10.20 (0.2852) |
| 2 | 24.22 | 34.92 | 24.85 | -10.70 (0.3778) | -0.63 (0.3646) | 10.07 (0.2888) |
| 3 | 24.34 | 35.04 | 24.82 | -10.70 (0.3784) | -0.48 (0.3579) | 10.22 (0.2815) |
| 4 | 24.23 | 34.96 | 24.93 | -10.73 (0.3806) | -0.71 (0.3688) | 10.03 (0.2938) |
| 5 | 23.44 | 35.12 | 25.08 | -11.69 (0.3370) | -1.64 (0.4022) | 10.04 (0.2967) |
| 6 | 22.52 | 35.05 | 24.78 | -12.53 (0.3013) | -2.26 (0.4486) | 10.27 (0.2918) |
| 7 | 22.02 | 35.06 | 24.94 | -13.04 (0.2903) | -2.93 (0.4898) | 10.11 (0.3015) |
| 8 | 22.18 | 35.05 | 20.83 | -12.87 (0.3092) | 1.34 (0.4959) | 14.22 (0.2227) |
| 9 | 23.50 | 35.24 | 20.76 | -11.74 (0.3521) | 2.75 (0.4143) | 14.48 (0.2147) |
| 10 | 25.51 | 35.32 | 19.48 | -9.80 (0.4491) | 6.04 (0.3336) | 15.84 (0.1938) |

**Note:** This table presents the average twenty one-day cumulative abnormal return, CAR (-10,+10), around the announcement of the deal for the firms in the three earnings management groups and differences in means between these three groups. The statistical significance of the differences in means for CAR is assessed by using the t-statistic assuming the heterogeneity of variance for two by-groups. Significant results are marked in bold and the corresponding *p*-values are given next in brackets.

**Variable definitions**: Groups 1 to 3 are classified based on Earnings Surprise, Abnormal R&D and Abnormal Accruals, as follows:

a) Group 1 AEM are targets that might have undertaken accruals earnings management solely, specifically targets with $ab\_ROA_{i\tau} > 0$, $ab\_rd_{i\tau} > 0$, $ab\_accr_{i\tau} > 0$;

b) Group 2 AEM +REM are targets that might have undertaken combined earnings management strategies based on accruals earnings management and real-activity earnings management simultaneously, specifically targets with $ab\_ROA_{i\tau} > 0$, $ab\_rd_{i\tau} < 0$, $ab\_accr_{i\tau} > 0$;

c) Group 3 REM are targets that might have undertaken real-activity earnings management solely, specifically targets with $ab\_ROA_{i\tau} > 0$, $ab\_rd_{i\tau} < 0$, $ab\_accr_{i\tau} < 0$.

**Table 7.7 Pre-announcement Stock Returns by Firms Group Based on Earnings Surprise, Abnormal R&D and Abnormal Accruals at the Time of a Deal**

| Groups Based on Earnings Surprise, Abnormal R&D and Abnormal Accruals | N | CAR (-2,+2) | CAR (-5,+5) | CAR (-10,+10) |
|---|---|---|---|---|
| **Group 1: AEM** | 10 | | | |
| Mean | | **0.2019** | **0.2255** | **0.2551** |
| | | **(**0.0057) | **(**0.0322) | **(**0.0295) |
| Median | | **0.1824** | **0.1880** | **0.2357** |
| | | **(**0.0069) | **(**0.0218) | **(**0.0367) |
| **Group 2: AEM +REM** | 18 | | | |
| Mean | | **0.3214** | **0.3405** | **0.3532** |
| | | **(**0.0001) | **(**0.0001) | **(**0.0004) |
| Median | | **0.2203** | **0.2550** | **0.2446** |
| | | **(**0.0002) | **(**0.0002) | **(**0.0003) |
| **Group 3: REM** | 13 | | | |
| Mean | | **0.1556** | **0.2139** | **0.1948** |
| | | **(**0.0012) | **(**0.0003) | **(**0.0471) |
| Median | | **0.1393** | **0.1732** | **0.2164** |
| | | **(**0.0024) | **(**0.0019) | **(**0.0231) |

**Note:** This table presents the average and median daily cumulative abnormal returns for the firms in the three groups. CAR (-2,+2) is the five-day cumulative abnormal return around the announcement of the deal where the market model parameters are estimated over the period (-240, -41) relative to the announcement day. CAR (-5,+5) is the eleven-day cumulative abnormal return around the announcement of the deal where the market model parameters are estimated over the period (-240, -41) relative to the announcement day. CAR (-10,+10) is the twenty one-day cumulative abnormal return around the announcement of the deal where the market model parameters are estimated over the period (-240, -41) relative to the announcement day. The statistical significance of CAR is assessed by using the t-statistic and (*t*-stat) and Wilcoxon signed-rank test statistic (*z*-stat) which accounts for event-induced changes in return variance. Significant results are marked in bold and the corresponding *p*-values are given next in brackets.

**Variable definitions**: Groups 1 to 3 are classified based on Earnings Surprise, Abnormal R&D and Abnormal Accruals, as follows:

a) Group 1 AEM targets that might have undertaken accruals earnings management solely, specifically targets with $ab\_ROA_{i\tau} > 0$, $ab\_rd_{i\tau} > 0$, $ab\_accr_{i\tau} > 0$;

b) Group 2 AEM +REM are targets that might have undertaken combined earnings management strategies based on accruals earnings management and real-activity earnings management simultaneously, specifically targets with $ab\_ROA_{i\tau} > 0$, $ab\_rd_{i\tau} < 0$, $ab\_accr_{i\tau} > 0$;

c) Group 3 REM are targets that might have undertaken real-activity earnings management solely, specifically targets with $ab\_ROA_{i\tau} > 0$, $ab\_rd_{i\tau} < 0$, $ab\_accr_{i\tau} < 0$.

# 7.5 Conclusions

This chapter examines the earnings management behaviour of a sample of UK publicly listed targets involved in M&A between 1990 and 2008. Prior studies on

earnings management by targets mostly investigate accruals earnings manipulation as a sole earnings management technique.

Following recent literature (e.g., Cohen and Zarowin, 2010; Zang, 2011; Roychowdhury et al., 2012), in this study both accruals and real- activity manipulation are considered as alternative options undertaken by targets to engage in earnings inflation simultaneously prior to M&A. In addition, following Roychowdhury et al. (2012), more refined measures of earnings surprise and abnormal R&D expenditure are employed by using a fixed effects panel data model to control for unobservable firm heterogeneity.

This chapter contributes to the literature by providing the following evidence. Firstly, the analysis per earnings management groups and M&A years provides clear and consistent evidence that targets are more likely to use combined strategies of income-increasing earnings management via both accruals and real-activities simultaneously rather than simple strategies based solely on either accruals or real-activities. Secondly, this chapter also finds evidence that firms with positive ROA surprises, negative abnormal R&D expenditure and positive abnormal accruals exhibit a significant increase in proportions of firms across the M&A periods relative to the non-M&A periods. This suggests that targets' managers experience a greater propensity to deploy combined strategies of earnings management (accruals earnings management and real-activity earnings management) prior to M&A rather than simple strategies based solely on either accruals or real-activities, despite the high and long-run cost of real-activity earnings management. The results are closely related to those reported by Roychowdhury et al. (2012) and are also consistent with those reported by Cohen and Zarowin (2010), as they find evidence of real-activity earnings management, along with that of accruals manipulation for SEO firms.

Finally, the stock return-tests in this chapter provide evidence that firms with positive earnings surprise, unusually low R&D expenses and high accruals (and thus exhibit evidence of combined earnings management strategies) appear to be the most overvalued targets prior to M&A. The abnormal return results are statistically significant and consistent with those reported by Roychowdhury et al. (2012).

The last chapter provides a summary of the main results and findings of the thesis, and limitations and future directions for research.

# Chapter 8   Conclusions

## 8.1 Introduction

Prior research on earnings management by targets in the M&A context focuses mostly on US targets (e.g., Easterwood, 1997; Eddey and Taylor, 1999; Erickson and Wang, 1999; Shen, 2005; Anilowski et al., 2009; Anagnostopoulou and Tsekrekos, 2012, 2013). Furthermore, the evidence of accruals earnings management has been rather context-dependent and shows that opportunistic accruals earnings management is not a common practice among targets in M&A. However, these studies do examine accruals manipulation as a sole earnings management technique, and ignore real-activities manipulation as an alternative option undertaken by targets simultaneously. More recent literature examines the relationship between deal premium and accruals earnings management and the impact of targets' earnings quality on decisions during the M&A process, and finds that if earnings manipulation by targets is detected, acquirers take into account the target's earnings quality and adapt their takeover strategies by adjusting downward the deal price (e.g., Anilowski et al., 2009; Raman et al., 2013). Examining corporate diversification as a potential mitigating factor of accruals earnings management, a related strand of literature provides evidence that industrial

diversification helps mitigate discretionary accruals (Jiraporn et al., 2008; El Mehdi and Seboui, 2011).

Recent research provides evidence that firms use multiple earnings management strategies based on accruals and real-activities (Graham et al., 2005; Roychowdhury, 2006; Cohen and Zarowin, 2010; Zang, 2011; Roychowdhury et al., 2012), and managers prefer real-activities manipulation over accruals earnings management as a way to overstate reported earnings (Graham et al., 2005). More interestingly, given a greater relative opacity of real-activity manipulation compared to accruals earnings management, some studies argue that at times of heightened scrutiny, such as M&A, earnings management via accruals are unlikely to be a dominant source of overvaluation (Cohen and Zarowin, 2010; Roychowdhury et al., 2012). Finally, another line of literature examining targets' overvaluation at the time of M&A (Huang and Walkling, 1987; Davidson and Cheng, 1997; Bauguess et al., 2009) has provided evidence of a relationship between accruals earnings management and M&A overvaluation (Rangan, 1998; Teoh et al., 1998b; DuCharme et al., 2004; Roychowdhury et al., 2012).

Given the increased interest in firms' earnings management behaviour and the impact of quality of financial information in the M&A process, this thesis examines accruals and real-activity earnings management prior to a deal. M&A are important events for both acquirers and targets: an acquisition or merger has significant consequences on both parties' shareholders, managers, customers, suppliers, investors, as well as the whole economy. If earnings management can be achieved and leads to a stock overvaluation in the capital market, it will also have a significant negative impact on reallocation of capital through M&A to its most productive uses of resources in an economy or region.

This chapter provides a summary of the main findings of this thesis, implications and limitations of the empirical analysis and future directions for research.

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This chapter proceeds as follows: Section two presents the results and main findings of the empirical studies. Section three discusses policy implications. Finally, section four presents limitations and future research avenues.

## 8.2 Summary of Results

This thesis provides a detailed analysis of the earnings management behaviour of targets based on combined and simple strategies via accruals and real-activities prior to M&A, and its consequences on stock overvaluation. In addition, it investigates the relationship between corporate diversification as a potential mitigating factor and accruals earnings management. Chapter 2 presents an overview of M&A activity in the UK, discusses how the takeover success is assessed in literature, the main deal characteristics and the shareholder wealth effects, and reviews and discusses the benefits and costs of earnings management. The definitions and strategies of earnings management, the models used to estimate earnings management, and the consequences of both accruals and real-activity earnings management on operating performance and stock prices are presented in Chapter 3. Chapter 4 describes and presents the data, the selection of samples and research methodology used in the empirical chapters. Then this thesis addresses three research questions in Chapter 5, 6 and 7. The next sections of this chapter present the main results and findings of the empirical chapters.

## 8.2.1 Accruals Earnings Management and Deal Premium in the UK

Chapter 5 has two main objectives. This chapter first examines whether UK publicly listed targets attempt to manipulate earnings via accruals prior to a deal in the M&A context. Secondly, it investigates the relationship between deal premium and the targets' earnings management behaviour. The results of the accruals tests under the cross-sectional modified-Jones model and the performance-matched model and using either the balance-sheet approach or the cash-flow approach, indicate that, on average, UK publicly listed targets do not manage earnings upward prior to mergers and acquisitions. These results are consistent with those reported in Eddey and Taylor (1999) who find that there is no systematic evidence of earnings management by targets in Australia. Furthermore, the analysis of the effect of deal premium on earnings management provides evidence that the deal premium and the targets' abnormal accruals are negatively related, suggesting that acquirers take into consideration the quality of targets' earnings in making takeover decisions. In a broader context, while earnings quality has been shown to affect the acquirers' takeover decisions (e.g., Anilowski et al., 2009; Raman et al., 2013), the evidence in this chapter suggests that the deal premium constrains targets' accruals earnings management and acts as a strong disincentive to manipulate earnings. Consequently, the cost of detection explanation for the lack of earnings management by UK targets appears capable of explaining this relationship between the deal premium and the abnormal accruals of targets.

## 8.2.2 Accruals Earnings Management and UK Firm diversification

Chapter 6 investigates whether corporate diversification has an impact on earnings management by UK targets in mergers and acquisitions. Following prior research (Jiraporn et al., 2008; El Mehdi and Seboui, 2011), an explicit distinction between industrial and geographical diversification is made in this study. Prior research provides evidence consistent with both the informational asymmetry hypothesis and the offsetting accruals hypothesis, and shows that the mode of diversification (industrial vs. geographical) can explain the difference in the correlation between discretionary accruals and diversification due to whether business units are located in different countries and/or whether they are in different industry segments (Kim and Kim, 2001). The results of this empirical chapter suggest that corporate diversification does not contribute to a higher magnitude of earnings management. On the contrary, industrial diversification mitigates earnings management by UK targets prior to mergers and acquisitions. In addition, the results also show that a combination of industrial and geographical diversification alleviates earnings management. However, there is no clear empirical evidence that geographical diversification facilitates or mitigates earnings management by UK targets. These results are consistent with those reported in Jiraporn et al. (2008) who provide evidence of a negative relationship between earnings management and industrial diversification and show that a combination of industrial and global diversification helps alleviate earnings. El Mehdi and Seboui (2011) also find that industrial diversification decreases earnings management by US firms.

## 8.2.3 Accruals and Real-Activity Earnings Management, and UK Targets' Stock Overvaluation

Chapter 7 analyses earnings management behaviour of UK targets, in particular combined and simple strategies based on accruals and real-activities prior to M&A, and the impact of earnings management in inducing overvaluation at the time of a deal. Prior literature provides evidence that firms use multiple earnings management strategies based on accruals and real-activities (Graham et al., 2005; Roychowdhury, 2006; Cohen and Zarowin, 2010; Zang, 2011; Roychowdhury et al., 2012). However, it suggests that at times of heightened scrutiny, such as M&A, earnings management via accruals are unlikely to be a dominant source of overvaluation (Cohen and Zarowin, 2010; Roychowdhury et al., 2012). Consistent with this view, the results of this chapter show that if targets engage in income-increasing earnings management, they are more likely to use combined strategies of earnings management via both accruals and real-activities simultaneously, rather than simple strategies based solely on either accruals or real-activities.

Furthermore, managers' propensity to engage in combined strategies of earnings management prior to M&A is significantly higher than the propensity for accruals earnings management despite the higher and long-term costs of this earnings management method. These results are closely consistent with those reported by Roychowdhury et al. (2012), however in their study they do not compare directly simple and combined earnings management methods based on accruals and real-activities. In a broader context, these findings are also largely consistent with Cohen and Zarowin (2010) as they find evidence of real-activity earnings management, along with that of

accruals manipulation for SEO firms, although they do not consider whether accruals earnings management or real-activity earnings management occurred solely or jointly and whether the stock return overvaluation is driven more by simple or combined earnings management methods. Finally, the stock return tests performed in this chapter provide evidence that firms with positive earnings surprises, unusually low research and development expenses and high discretionary accruals (thus, exhibit evidence of combined earnings management strategies) appear to be the most overvalued targets prior to M&A which is consistent with those results reported by Roychowdhury et al. (2012). The results of the stock return tests are statistically significant and also consistent with those reported for UK firms by prior literature (e.g., Croci and Petmezas, 2010).

## 8.3 Implications

The main findings of this thesis have important implications for regulators, accounting standard setters and policy makers, targets' shareholders, board of directors, auditors, investment banks and financial advisors. There are also implications for investors, acquirers and financial analysts. Firstly, the regulators and accounting standard setters should improve regulation and accounting standards to prevent and mitigate accruals and real-activity earnings management, as well as to identify and punish cases of earnings manipulation. While the results of this thesis show that, on average, accruals earnings management by UK targets is not a widespread practice in M&A, however, there are targets with extremely low or high levels of discretionary accruals which suggests that some targets have engaged in earnings management prior to a takeover. Given the significant consequences of earnings manipulation on stock

overvaluation in the capital markets prior to deal announcements, enhancing regulation and accounting standards in order to prevent and constrain earnings management behaviour will alleviate the negative consequences of these activities.

Secondly, targets' shareholders, board of directors and auditors, as well as financial analysts, investment banks and financial advisors need to be alert to managers attempting to engage in earnings management via accruals, but also carefully monitor real-activities as an alternative method of manipulating earnings. The findings of this thesis reveal that managers are more likely to use combined strategies of earnings management via both accruals and real-activities simultaneously rather than simple strategies based solely on either accruals or real-activities. In addition, it also documents a higher propensity to engage in combined strategies of earnings management prior to M&A than the propensity for accruals earnings management despite the higher and long-term costs of this earnings management method.

Thirdly, this thesis also bears implications for investors, acquirers and financial analysts. The evidence of this study is consistent with the targets' stock overvaluation hypothesis. In particular, targets employing combined strategies of earnings management appear to be the most overvalued prior to M&A. Therefore, investors, acquirers and financial analysts should be fully aware of the existence and severity of targets' stock overvaluation when they make or facilitate important investment decisions. Ignoring this factor of information asymmetry when assessing targets' value will deteriorate investors' and acquirers' returns.

## 8.4 Limitations and Future Avenues for Research

This thesis, however, has a few important limitations. Firstly, following prior literature on earnings management, the empirical analysis employs two widely-used accruals models: namely the modified-Jones model (Dechow et al., 1995) and the performance-matched Jones model (Kothari et al., 2005), and uses the "portfolio" approach to detect earnings management. While, one of the benefits of this approach is comprehensiveness due to focusing on aggregate accruals accounts, one of its drawbacks is less precise modelling. More recent studies have used specific accruals components, such as the allowance for uncollectible accounts and bad-debt expenses to examine accruals earnings management in the M&A context (e.g., Cecchini et al., 2012). For example, Cecchini et al. (2012) find that IPO firms have conservative allowances for uncollectible accounts and record larger bad-debt expenses, which suggests that these firms understate receivables-related accruals. The main advantage of the one-variable approach used by these studies is that the researchers are able to model nondiscretionary component more precisely by incorporating important contextual features of the accruals accounts into their research design (McNichols and Wilson, 1988; Cecchini et al., 2012). Further work in this field might explore accruals earnings management using refined expectations models based on the one-variable approach for provision for bad debts or discretionary component of accounts receivables, inventory, accounts payable and accrued liabilities.

Secondly, the selection of the control sample and the cross-sectional accruals estimation approach used in this thesis might be considered another limitation. Following prior literature (e.g., DeFond and Jiambalvo, 1994; Subramanyam, 1996;

Botsari and Meeks, 2008), the control sample used to estimate normal and abnormal accruals of targets consists of all UK publicly listed firms (active and dead) that have the necessary data on Datastream/Worldscope to estimate accruals, excluding the sample firms which had experienced a takeover event. To overcome the sample attrition problem specific to industry-cross estimation, in this study the normal level of accruals is determined for each industry grouping/year portfolio with at least 6 observations. The industry groupings used for cross-sectional accruals estimation are based on two-digit SIC code as in Cohen and Zarowin (2010). The underlying assumption is that the industry grouping classification of the control sample has a reasonable level of homogeneity with respect to the accruals generating process, which in literature is referred to "peer firms". However, more recent research argues that pooling data across industry to form industry grouping can introduce noise and lower the power of the accrual tests (Dopuch et al., 2011) and, more interestingly, it proposes size-based control samples which are seemingly better at detecting abnormal accruals than industry-based ones (Ecker et al., 2013). Therefore, further research could use a size-based control sample as a robustness test to detect accruals earnings management by targets in the M&A context.

This thesis focuses only on earnings management by targets in the M&A setting and finds evidence that if targets engage in income-increasing earnings management, they are more likely to use combined strategies of earnings management via both accruals and real-activities simultaneously rather than simple strategies based solely on either accruals or real-activities. These main findings are generally consistent with both the information asymmetry hypothesis and the financial incentives hypothesis. However, no aspect of the takeover defence hypothesis is explored in this empirical analysis. Therefore, it would be worthwhile for future research to investigate simultaneously the possibility of earnings management by acquirers and its potential impact on earnings

manipulation by targets. Prior research has extensively documented evidence that the acquirers are very likely to manipulate reported earnings prior to M&A, especially in stock-for-stock takeovers (e.g., Erickson and Wang, 1999; Louis, 2004; Koumanakos et al., 2005; Louis, 2005; Botsari and Meeks, 2008; Gong et al., 2008).

Another possible limitation of this thesis is caused by the methodology employed to examine the relationship between accruals earnings management and deal premium in the first empirical study. While alternative proxies are used for accruals earnings manipulation, the targets' shareholders' gains are measured by using the data on the four week-deal premium provided by Thomson One Banker M&A. As mentioned before, this is defined as the percentage by which the offer price exceeded the closing price of the target four weeks before the announcement. The main disadvantage of using this proxy for the targets' shareholders' gains is that there may be a serious measurement error caused by the market shocks or events unconnected to the acquisitions that may occur during the four week period prior to a deal. A possible way of mitigating this measurement error as a robustness test is to use a market-adjusted four-week premium estimated as an amount in excess of the four-week return on a suitable market index. Alternatively, following Anilowski et al. (2009) another robustness test can use short-window cumulative abnormal return as an additional proxy for the targets' shareholders' wealth and then regress it on discretionary accruals to examine the second hypothesis of the first empirical study.

This thesis focuses only on targets involved in complete deals over the period 1990-2008 and examines their earnings management behaviour and consequences on shareholder wealth effect. Another interesting topic for future research would be about targets of unsuccessful takeovers and whether or not they engage in accruals and real-activity earnings management prior to a deal, and whether the probability that a

takeover bid will be consummated is associated with their degree of earnings management.

Finally, extending the sample period and sample structure to private UK companies would provide interesting avenues for future research. The data used in this thesis cover the period 1990-2008; therefore extending the data beyond 2008 could improve the generalization of the results. Furthermore, this study examines earnings management behaviour of UK publicly listed targets ignoring the private companies which might have different incentives to engage in earnings manipulation and costs of detection. In the UK, prior research shows that private companies represent a significant proportion of the total number of takeovers (e.g., Draper and Paudyal, 2006; Jackson and Miyajima, 2007).

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