WHAT INFLUENCE EARNINGS MANAGEMENT BY SHARE-FINANCED ACQUIRERS PRIOR TO DEAL ANNOUNCEMENTS?

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ABSTRACT OF THESIS

This research aims to investigate the earnings management of acquiring firms prior to a merger announcement as well as the effect of board connections and the characteristics of Chief Executive Officers (CEOs) on earnings management prior to the merger announcement. Beside the use of both versions of the Jones models to detect accrual-based earnings management and the models developed by Roychowdhury (2006) to detect real earnings management, the research also uses the deviation between the distribution of the first digits of figures reported on financial statement and the theoretical distribution predicted by Benford's Law. The empirical research is based on secondary data for firms in the United Kingdom (UK) over the period from 2007 to 2012.

The thesis firstly revisits the issue earnings management prior to the merger announcement of both share-financed and cash-financed acquirers. Using a sample of 295 observations of UK public acquirers from 2007 to 2012, the study finds that share-financed acquirers exhibit significantly high abnormal accruals and abnormal real earnings activities in the first year prior to a merger announcement. The results are in line with existing evidence (Louis 2004; Botsari and Meeks 2008; Zhu and Lu 2013). However, despite the amount of evidence suggesting share-financed acquirers manage earnings prior to announcing the deals, the evidence still attracts criticism because of the pitfalls of the empirical models to capture earnings management, especially the most popularly-used Jones' accruals model and the Roychowdhury's (2006) real earnings management (Dechow et al. 2010a; Ball 2013). A large body of the literature on earnings management in the context of mergers and acquisitions has been developed assuming the Jones and Roychowdhury's models are capable of

capturing earnings management, hence the serious criticisms of those models present a big question mark over what we actually know about the issues of earnings management prior to share-financed mergers. Addressing that concern is not only topical, but also will make an important contribution to the literature. The thesis significantly strengthens the evidence suggesting share-financed acquirers do indeed manage earnings prior to the merger announcement by using the deviation between the distribution of the first digits of reported figures of financial statement and the theoretical distribution from Benford's Law as an alternative proxy for earnings management. Given the importance of a thorough understanding of the behaviour of acquirers in the building up to a merger, the contribution of this first empirical chapter cannot be overstated.

Secondly, the thesis investigates whether and how board connections between the acquiring and target firms affect the earnings management behaviour of share-financed acquirers prior to a merger announcement. It compares abnormal accruals and real activities prior to the merger announcement between acquirers with board connections to targets and acquirers without board connections to targets. Under cash-financed mergers and acquisitions (M&A), no significant difference is found in accrual earnings management between these two types of firm. The analysis, however, shows that share-financed acquirers with board connections increase accrual earnings significantly in the first and second years prior to the merger announcement, while those without board connections manipulate real activities in the first year prior to the merger announcement. The findings suggest that lower uncertainty about the M&A deal and a stronger bargaining position in the negotiations held by acquirers with board connections allow the firms to time the acquisition strategically and confidently inflate their accruals, while acquirers without board connections shift from accrual-based earnings management to real earnings management to avoid the legislation risk. The documented behaviour of share-financed acquirers to time the earnings management prior to the merger announcement is both original and important, while the evidence on the choice of earnings management strategies also add significantly to the growing literature looking at the trade-off between accrual-based and real earnings management.

Finally, the thesis extends prior studies by examining the relationships between CEO characteristics and accrual-based and real earnings management among share-financed acquirers before the merger announcement. The study finds that share-financed acquirers led by CEOs with financial expertise, long tenure and high reputation are associated with lower abnormal accruals and real activities. The correlations are statistically significant and are consistently found in the first year before the merger announcement. The findings are robust as abnormal accruals and real activities are measured in different ways and different models are employed. The evidence suggests that CEO characteristics have an impact on earnings management in the contexts of M&A and have some implications for practitioners.

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LIST OF ACRONYMS

Acronyms	Full names
ASX	Australian Stock Exchange
CEO	Chief Executive Officer
CFO	Chief Finance Officer
CGT	Capital Gains Tax
FIFO	First-In and First-Out
FRC	Financial Reporting Council 2016
GAAP	Generally Accepted Accounting Principles
ISIN	International Securities Identification Number
IPO	Initial Public Offering
LIFO	Last-In and First-Out
M&A	Merger and Acquisition
OLS	Ordinary Least Square
R&D	Research and Development
SDC	Securities Data Company
SEC	Securities and Exchange Commission
SEO	Seasoned Equity Offering
SOX	Sarbanes-Oxley Act
VCs	Venture Capitalists
UK	United Kingdom
US	United States (of America)

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research and gave me constructive comments. Their valuable comments certainly contributed to the quality of this thesis.

CHAPTER 1: THESIS INTRODUCTION

This chapter first explains the background of the study which shows what earnings management is, how to manage earnings and the earnings management in the context of M&A. Second, this chapter presents the problems that the thesis tries to tackle and methodologies used. Third, the chapter also describes the contributions of the thesis. Finally, the chapter summarises main components of the thesis.

1.1 BACKGROUND OF THE STUDY

Blair (1995) stated that “Maximizing shareholder wealth has increasingly become the most important objective of corporate management, especially in an age of aggressive corporate acquisitions and the rising power of institutional investors”. Thus, managers of companies have a motivation to present financial statements as favourable as possible for shareholder value. Potential investors and creditors base the decision on whether or not to become an investor or lend the company money on the financial statements. Therefore, in order to achieve their financial targets, the company managers may manage corporate earnings to make financial statements look better than what would represent the ‘complete’ and ‘real’ picture of the company. A number of techniques are used to manage earnings, such as revenue and expense recognition, changing accounting methods and policies, one-time charges, or manipulating real earnings activities.

Earnings, also called profit, comprise revenue minus expenses. Managers can manage earnings upwards by recognizing future revenue to increase earnings in the current period or delay recognizing expenses. In contrast, managers can manage earnings downwards or shift earnings in the current period to the next period by recognizing expenses prematurely or delaying the recognition of revenue (Healy 1985; Teoh et al. 1998a).

Companies are also allowed by accounting standards to choose among the permitted reporting methods that works best for them. For example, companies can decrease (or increase) the cost of goods sold by changing the method of stock valuation (e.g. first-in and first-out [FIFO] to last-in and first-out [LIFO]) to increase (or decrease) companies' earnings. When the company changes from one accounting method to another to affect earnings, it engages in earnings management (Teoh et al. 1998a). In many cases, the change in accounting methods may be undetected by investors or creditors. As a result, the investor and creditors cannot determine whether the company is performing well or the financial statement is manipulated (Healy and Wahlen 1999).

Another way to manage earnings is to time the writing off of the cost of a failed project which is a particularly large one-time expense. For example, the company may engage in earnings management by writing off major assets in periods when profits are high and the reduction in value of those assets will not make the financial statement look too poor (Healy 1985; Roychowdhury 2006).

Apart from managing earnings via changing accounting methods and estimations, companies can also influence reported earnings by making changes to real activities, such as sales policies, production volume etc. Manipulating real earnings activities occurs, for example, when companies provide a greater price discount to increase sales, or increase the number of units produced to reduce the cost per unit sold, or reduce research and development (R&D), advertising and selling, general and administrative expenses to decrease costs (Roychowdhury 2006).

In the methods outlined above, managers might not be violating any accounting standards or regulations. Hence, earnings manipulation is not necessarily fraudulent. It is common that managers would take advantage of how accounting rules are applied to report a profit that looks like they are achieving their financial targets, such as: avoiding reporting decreases in earnings; avoiding reporting losses; or meeting analysts' forecasts. In other words, managers often manage earnings because they have a motive to do so.

In a stock swap M&A deal, it is sensible to ask: "Do acquiring firms inflate their earnings?". If the price of acquiring firms' share prior to a merger announcement is higher, the acquirer will need to issue fewer shares to pay for the deal, which means the cost of the deal is cheaper from the acquirer's point of view (Louis 2004; Botsari and Meeks 2008). Therefore, the acquirer will have a financial motive to engage in earnings management for boosting their share price prior to the takeover. It is also sensible to ask questions such as "Do acquirers with board connections or CEOs with different characteristics inflate their earnings differently?" because connections with the target and CEO personal traits might affect the underlying motive managers have while trying to manipulate earnings prior to the deal announcement. This thesis attempts to make contributions to those issues.

1.2 STATEMENT OF THE PROBLEMS

This thesis investigates whether and how share-financed acquirers manage earnings prior to M&A deals. The problem has been investigated extensively in the extant literature, the thesis aims to contribute further to this trend of literature by several ways. First, the thesis revisits the earnings management of share-financed acquirers prior to M&A deals using Benford Law because there is the issue of limitations to the effectiveness of models such as the Jones and modified Jones models to detect accruals earnings management and Roychowdhury models to detect real earnings management. Second, the thesis attempts to explain the strategies of earnings management used by acquirers with and without board connections prior to a merger announcement in the UK because previous research shows that the firms' connections can affect corporate's financial decision. Third, the thesis brings in CEO characteristics as a new dimension in detect earnings management of acquirers prior to M&A deals.

1.3 RESEARCH METHODOLOGY

Research methodology is applied in this PhD research to deal with the problem mentioned in Section 1.2 are as followings:

- The first investigation of this research is to revisit how earnings management is employed by both share- and cash-financed acquirers prior to a merger announcement in the UK using the Jones and modified Jones models to estimate accrual-based earnings management[1], the models developed by Roychowdhury (2006) to estimate real earnings management[2] and the deviation between the distribution of the first digits of figures reported in financial statement and the theoretical distribution predicted by Benford's Law as an alternative proxy for earnings management to mitigate concerns regarding possible errors in measuring accrual-based and real earnings management.
- The second investigation of this research is to investigate the strategies of earnings management used by acquirers with and without board connections

[1] Accrual-based earnings management represents accounting choices of accounting methods, application of accounting methods, an accounting method timing (Teoh et al. 1998a).
[2] Real earnings activities are not only accounting implications but also economic implications. They are "real" business activities, such as: price discounts, choice or timing of investment (Teoh et al. 1998a; Weil et al. 1998).

prior to a merger announcement in the UK by using Jones's models to detect accruals earnings management and Roychowdhury's models to detect real earnings management.

- The third investigation of this research is to investigate the effect of CEO characteristics on earnings management prior to a merger announcement in the UK by using Jones's models to detect accruals earnings management and Roychowdhury's models to detect real earnings management.
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1.4 RESEARCH CONTRIBUTIONS

The main contributions of the study are summarized as follows.

This study fully reviews previous studies in the literature on earnings management. This review summarizes, clarifies and evaluates theories concerning earnings management, motivations for such behaviour and proxies for earnings management. This literature review also summarizes and evaluates the models constructed to estimate earnings management proxies.

This study is the first to document whether acquirers inflate their earnings prior to a merger announcement by examining both abnormal accruals under the Jones and modified Jones models and real earnings activities under the models developed by (Roychowdhury 2006) as well as assessing the likelihood of errors in financial reports using Benford's Law. Therefore, this thesis contributes to the earnings management literature by (1) reinforcing the efficiency of Jones and modified John models in estimating accrual-based earnings management and the models developed by (Roychowdhury 2006), (2) confirming Benford's Law as a reliable indicator of earnings management, which provides investors and regulators with an easily implementable approach for assessing errors in the financial reports, and (3) strengthening the important evidence that share-financed acquirers inflate earnings prior to a merger announcement.

Previous studies (Renneboog and Zhao 2011, 2014; Ishii and Xuan 2014) have paid attention to investigating value creation and destruction post mergers to examine the effect of board connections on corporate investments. This study extends previous research by investigating the effect of board connections on earnings management prior to a merger announcement. The evidence provided from this investigation is original and makes significant contribution to our understanding of how the network of board directors affect corporate decisions.

This study also provides evidence of the effect of CEO characteristics on earnings management prior to the merger announcement. The findings can be useful for practitioners such as investors and auditors. They suggest that investors should be cautious when using information related to M&A announcements from acquirers with CEOs without financial expertise, with short tenure and with low reputation because earnings are more likely to be manipulated in such cases in the first year before the merger announcement. The reason is that inflated earnings can be reversed in subsequent periods, which in turn reduces abnormal returns from investments in the stocks of acquirers. Similarly, when auditing financial statements, auditors could particularly pay attention to firms with such CEOs because the risks of earnings management are high in the first year before M&A.

1.5 MAIN COMPONENTS OF THE THESIS

This thesis aims to make contributions to the growing literature on earnings management. The main components of the thesis comprise four chapters (2, 3, 4 and 5). Chapter 2 provides a general understanding of earnings management and M&A, the theoretical perspectives of earnings management, earnings management measurement, motivations for earnings management and M&A. Chapters 3, 4 and 5 are empirical studies, each of which contributes significantly to an important topic within the earnings management and M&A themes. This following sub-sections are devoted to introducing the topic investigated in each of the empirical chapters and highlight the main contributions.

1.5.1 Chapter 2: Earnings management and mergers and acquisitions

Earnings management can be undertaken in numerous ways and through various actions. There are many different motivations encouraging firms and managers to engage in earnings management activities. Moreover, earnings management activities have been detected by many proxies which also are estimated by numerous models. First, chapter 2 provides a general understanding of earnings management and the theoretical perspectives. Second, it discusses the approaches used to detect earnings management. These approaches estimate abnormal total accruals, sets of accruals or specific accruals, investigate earnings distribution and estimate real earnings management. Third, the chapter provides an in-depth review of the motivations for earnings management. Finally, Chapter 2 discusses the definition of M&A and the methods of payment. It also provides a literature review on the motivations for M&A.

1.5.2 Chapter 3: Revisiting the evidence of earnings of management prior to merger announcement: An application of Benford's Law.

Having reviewed in Chapter 2 the inflation of accounting earnings by share-financed acquiring firms prior to a merger announcement, this chapter aims at revisiting the issue using a new earnings management detection model. For detecting earnings management by acquirers, previous research employs the

Jones and modified Jones models to estimate accrual-based earnings management and the models developed by (Roychowdhury 2006) to estimate real earnings management. Chapter 3 goes on to investigate the engagement of acquiring firms in earnings management prior to a merger announcement and reinforce the existing evidence by introducing Benford's Law, which represents a recent methodology used to detect earnings management by assessing errors in financial statements. To examine errors in financial reports, the study follows Amiram et al. (2015) to (1) estimate FSD_SCORE, which is the mean absolute deviation between the distribution of the first digits of figures reported on financial statement and the theoretical distribution predicted by Benford's Law and (2) estimate KSMAX, which is maximum of cumulative absolute deviations between the distribution of the first digits of figures reported on financial statement and the theoretical distribution predicted by Benford's Law.

1.5.3 Chapter 4: The timing and strategies of earnings management by share-financed acquirers prior to merger announcements: Connection pays?

Chapter 3 explains the motivation for acquiring firms to engage in earnings management prior to a merger announcement. Chapter 4 extends on this by investigating the effect of board connections on earnings management prior to the merger announcement. This chapter tries to answer the question as to whether or not an acquirer with board connections to the target firm may engage in earnings management in a different manner from an acquirer without board connections to the target firm.

1.5.4 Chapter 5: Earnings management by share-financed acquirers prior to merger announcements: the roles of financial expertise, tenure and reputation.

Chapter 5 also extends Chapter 3 by investigating the effect of CEO characteristics on earnings management prior to a merger announcement. The study argues that CEO characteristics could affect earnings management prior to the merger announcement because CEO characteristics are demonstrated to affect M&A activities (Grinstein and Hribar 2004; Walters et al. 2007; Malmendier and Tate 2008; Custódio and Metzger 2013). This study investigates CEOs' financial expertise, tenure and reputation as proxies of CEO characteristics to examine the influence of CEOs' characteristics on earnings management prior to the merger announcement.

CHAPTER 2: EARNINGS MANAGEMENT AND MERGER AND ACQUISITIONS

2.1 DEFINITION OF EARNINGS MANAGEMENT

Over the past few decades, there has been a dramatic increase in research on earnings management. However, the prior literature has not provided a consensual definition of earnings management. There have been numerous ways in which the idea of earnings management has been described, especially concerning different research purposes.

One of the definitions most used is that of Healy and Wahlen (1999):

> *"…managers use judgement 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."*

The first feature of this definition is that managers could exercise judgement in financial reporting in many ways, commonly known as accrual-based earnings management, as follows:

(1) Estimating economic events in future such as losses from bad debts and asset impairments, deferred taxes, obligations other post-employment benefits.

(2) Choosing among accepted accounting methods to report an economic transaction, which used a different accounting method for the transaction

in previous period, such as FIFO or LIFO, and accelerated depreciation methods or straight-line depreciation methods.

The second feature of this definition is that there are some ways in which managers can use real business transactions, commonly known as real earnings management, for example: undertaking or deferring expenditure, such as on advertising, R&D or maintenance.

Consistent with the definition of earnings management of Healy and Wahlen (1999), later research finds evidence that managers avoid debt covenant violations by manipulating earnings upward (DeFond and Jiambalvo 1994; Jaggi and Lee 2002).

Based on the information perspective of accounting numbers, Schipper (1989) bases on private gain motivations to describes earnings management. Earnings management is thus defined as constituting:

> *"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 operation of the process)."*

The limitations of earnings management as defined by Schipper (1989) are that only the external reporting function is included, not other types of earnings management. Moreover, he does not consider whether or not manipulation through intervening in the financial reporting process violates generally accepted accounting principles (GAAP). However, the author shows that managers can access information that is not available to outside shareholders so that they take advantages of the information asymmetry by engaging in earnings management to achieve private gains. Later research shares the same view as Schipper (1989) on earnings management. Beneish (2001) provides evidence that managers mislead shareholders concerning the underlying economic performance of the firm by engaging in earnings management for private gains.

Unlike the earnings management definitions of Schipper (1989) and Healy and Wahlen (1999), Dechow and Skinner (2000) offer a clear conceptual difference between accounting fraud and earnings management activities (see Figure 2-1). They differentiate between accounting practices that are within GAAP, such as "conservative accounting, neutral accounting or aggressive accounting" (Dechow and Skinner 2000) are earnings management, which is within GAAP, and fraudulent accounting, which violates GAAP. Under earnings management within GAAP, the authors classify accrual earnings management (accounting choices) and real earnings management (real cash flow choices).

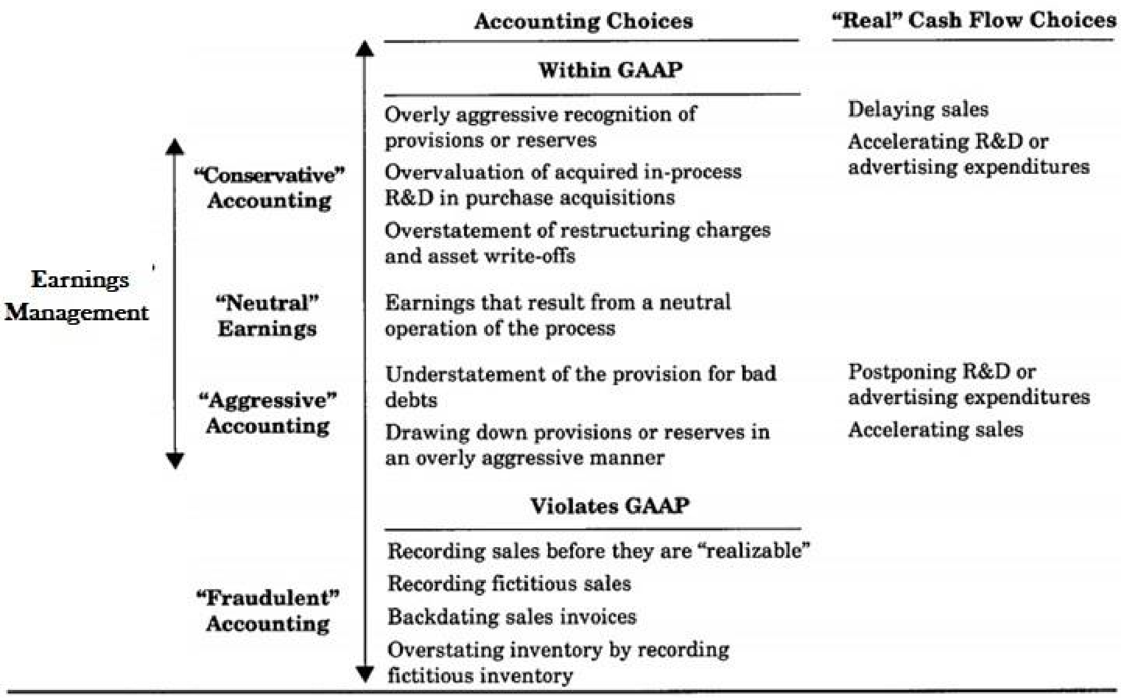

Figure 2-1: Distinction between earnings management and fraud

Focusing on real earnings management, Roychowdhury (2006) discusses several mechanisms by which managers may manipulate actual business transactions to affect reported earnings. The author explains that managers may structure business transactions to affect reported earnings by providing a lower price of their products, timing asset sales, or reducing R&D expenses. Roychowdhury (2006) defines earnings management as follows:

> *"…management actions that deviate from normal business practices, undertaken with the primary objective of meeting certain earnings thresholds."*

Roychowdhury (2006) provides evidence that managers avoid reporting annual losses by employing structuring business transactions to manipulate earnings upward. Consistent with Roychowdhury (2006)'s definition of real earnings management, some research has reported that companies attempt to achieve their financial goals be engaging in real earnings management (Cohen et al. 2008; Cohen and Zarowin 2010; Zang 2012).

Thus far, most earnings management definitions have argued that managers are motivated either by gaining private benefits or achieving firms' financial targets. However, earnings management is not always bad. Some judgements can provide positive information for investors. Healy and Wahlen (1999) argue that if the financial report is audited by reputable companies and the auditing result is reliable, the income estimated by managers will be considered as a credible forecast of income in future. Indeed, Healy and Wahlen (1999) state that *"decisions to use accounting judgement to make financial reports more informative for users do not fall within our definition of earnings management"*. Consistent with Healy and Wahlen (1999), Holthausen and Leftwich (1983) show that managers could also engage in earnings management to provide positive information for investors. The standpoint of Healy and Wahlen (1999) and

Holthausen and Leftwich (1983) on earnings management, however, focuses only on the positive aspect of engaging in earnings management. Ronen and Yaari (2008) present a more comprehensive description of earnings management, as follows:

> *"Earnings management is a collection of managerial decisions that result in not reporting the true short-term, value-maximizing earnings as known to management. Earnings management can be beneficial (it signals long-term value); pernicious (it conceals short- or long-term value) or neutral (it reveals the true short-term performance)."*

Ronen and Yaari (2008) classified the description of earnings management as beneficial, pernicious or neutral earnings managements. Beneficial earnings management is using flexible accounting methods to give a sign to investors on cash flows in next period. Pernicious earnings management is actions reduce transparency or misrepresent of the financial statement by using tricks. Finally, neutral earnings management is manipulation of the report, which is either economically efficient or opportunistic. This definition is a comprehensive earnings management definition, which includes both accrual-based earnings management and real activities-based earnings management. Both positive and negative aspects are mentioned in the definition. Therefore, it is the one adopted in this thesis.

2.2 THE THEORETICAL PERSPECTIVE OF EARNINGS MANAGEMENT

2.2.1 Theoretical background

Analyzing the definition of earnings in the previous section shows that managers can manage their earnings in a number of ways to achieve their firms' financial targets or private benefit. To understand why managers having different purposes in earnings management, we need to find theories which explain these financial activities. There are some fundamental theories can explain the purposes of managers when managers engage in earnings management such as shareholder theory, stakeholder theory or agency theory.

The shareholder theory was introduced by Friedman (1970) in the early 20th century. The author said that the main duty of firm is to maximize wealth for its shareholders in a way that does not violate the law or social values. It means that all business activities and financial decisions of the management team have to maximize shareholders' interests and do not maximize managers' interests.

The stakeholder theory was first introduced in 1988 by Evan and Freeman (1988) in his book “Strategic Management: A Stakeholder Approach." It argues that there are many people involve and have interests in firm besides shareholders. The authors said anyone involves and invests in and is affected by the firm is stakeholder such as employee, customer, supplier, governmental agency, community, shareholder and more. It means that a firm’s real success is to satisfy all its stakeholders, not just shareholders.

The agency theory was posited by Jensen and Meckling (1976). The authors argue that the managers are agents while the owners (shareholders) are principals, and they have conflicts of interests. Managers typically have an information advantage and more power compared to shareholders. They tend to take these advantages to benefit themselves rather than maximizing shareholders' interest.

2.2.2 Earnings management and theories

Understanding why earnings management can be pernicious, beneficial or neutral (Ronen and Yaari 2008) which are mentioned in the definition of earnings management section and the motivation for earnings management is important. As discussed in Section 2.2.1, Agency theory could well explain the pernicious aspect of earnings management. This theory states that there are different interests between shareholders (owners) and managers (employees) (Jensen and Meckling 1976) and managers tend to be self-serving, especially in firms with weak boards. Consistent to Jensen and Meckling (1976), Goergen and Renneboog (2011) shows that managers attempt to increase their benefit rather than maximize shareholders' wealth. In particular, Laux and Laux (2009) show evidence that managers manipulate earnings management when the firms use stock-based compensation scheme or Healy (1985) reveals that managers use accounting method choices to maximize their bonus awards. Consequently, engagement in earnings management may lead to a reduction in shareholder wealth (Cohen and Zarowin 2010). Thus, agency theory argues that it is necessary to align managers' and shareholders' interests.

Earnings management could be beneficial or neutral because managers could use earnings management to give a positive sign of firm's inside information to investors. The motivation for this is explained well by shareholder and stakeholder theories which explain that managers attempt to maximize shareholders and stakeholders. The activities of managers in beneficial and neutral earnings management are also explained by signalling theory, which suggests that "it could be the optimal solution that one party with information advantage (i.e. insiders) signals some private information to the other party (i.e. outsiders)" (Myers and Majluf 1984). Some research supports signalling theory.

Healy and Palepu (1993) show that the financial signalling policy of firms can affect stock prices. Arya et al. (2003) investigate the value of transparency in financial reporting and corporate governance for shareholders. They find that even when earnings management conceals information, shareholders can still gain some benefits.

2.3 MEASURES OF EARNINGS MANAGEMENT

2.3.1 Accruals earnings management

What are accruals? Under accounting standards, accruals are used to help firms record income or expenses at the time those income or expenses are incurred rather than at the time cash is collected or paid. Therefore, the fundamental objective of accruals is to disclose the real output of the company in the financial statements.

However, accruals can also be used as a mechanism to manipulate reported earnings. Reported earnings can be manipulated when managers delay asset write-offs, make inadequate provision for bad debts or opportunistically select accounting methods (Roychowdhury 2006). If these judgements are biased to affect the true performance of the firm, the manager has engaged in earnings management through accruals (Healy and Wahlen 1999).

To detect accrual-based earnings management, researchers need to differentiate normal accruals from abnormal accruals. Normal accruals (non-discretionary accruals) are needed under accounting standards to help financial statements reflect true performance, while abnormal accruals (discretionary accruals) are managed by managers (McNichols 2000). Thus, abnormal accruals are employed as a proxy for detecting accrual earnings management (DeAngelo 1986; Beneish 2001).

There are several methodologies to measure abnormal accruals appropriately. The literature documents accrual-based models and non-accrual-based models to detect accrual-based earnings management.

2.3.1.1 Accruals models before the Jones model

2.3.1.1.1 The Healy Model

Healy (1985) offers an early model to detect earnings management by managers to increase their compensation.

Author scales total accruals by lagged total assets and calculates the mean of this ratio. In order to detect earnings management, Healy (1985) builds the model compares the mean ratio across the earnings management partitioning variables. Compared to previous studies on earnings management, Healy (1985) focuses on predicting the existence of earnings management in every financial year. The model is applied to calculate non-discretionary accruals as follows:

Equation 2-1

$$NA_{i,t} = \frac{\sum_t TA_{i,t}}{A_{i,t-1}}$$

where: $\mathrm{NA}_{\mathrm{i},\tau}$ denotes the estimated normal accruals of firm *i*. $\mathrm{TA}_{\mathrm{i,t}}$ is total accruals of firm *i* in year *t*. $\mathrm{A}_{\mathrm{i,t-1}}$ is total assets of firm *i* in year *t*-1. The abnormal accruals component in the event period is the difference between the estimated normal accruals and total accruals in that period.

2.3.1.1.2 DeAngelo model

In a similar approach, DeAngelo (1986) uses the first differences in total accruals as a measure of earnings management, with the assumption that the expectation value of that first difference is equal to zero. DeAngelo (1986) measures normal accruals in this model by using the last period's total accruals. Therefore, DeAngelo proposes the model for estimating normal accruals as follows:

Equation 2-2

$$NA_{i,t} = TA_{i,t-1}$$

The Healy model and DeAngelo model calculate total accruals in a period and use the total accruals to expect normal accruals in next period. The measure of normal accruals in both models will have no error if the normal accruals remain over periods and are constant. However, there are some criticisms of the view that normal accruals are constant (Kaplan 1985; Dechow 1994). Also, Kaplan (1985) argues that the normal accruals could be different over periods cause of changing of economic conditions. Failure to recognize changes of the normal accruals may inflate standard errors and lead to biased estimates of the coefficient.

2.3.1.1.3 Industry model

Dechow and Sloan (1991) introduced the industry model, which supposes that normal accruals remain unchanged in different periods. The innovation is that this model supposes that the changes in normal accruals in the same industry are common across companies. Therefore, the industry model estimates the normal accruals as follows:

Equation 2-3

$$NA_{i,t} = \gamma_1 + \gamma_2 median(TA_{i,t})$$

where: $\mathrm{median}(\mathrm{TA}_{\mathrm{i,t}})$ is the median total accruals of industry of firm *i* in year *t*.

Two factors help this model reduce measurement error in estimating abnormal accruals. The first factor is the same variations in normal accrual of firms in the same industry is removed (Dechow et al. 1995). Second, the model removes the correlated variations in abnormal accruals over firms of an industry which would potentially cause a problem (Ronen and Yaari 2008).

2.3.1.2 The Jones model

Jones (1991) makes an effort to control the influences of changes in economics situations of firms on the non-discretionary accruals, but still supposes that normal accruals are unchanged. The model calculates the normal accruals as follows in the first stage:

Equation 2-4

$$\frac{TA_{i,t}}{A_{i,t-1}} = \alpha + \beta_1 \frac{\Delta REV_{i,t}}{A_{i,t-1}} + \beta_2 \frac{PPE_{i,t}}{A_{i,t-1}} + \varepsilon_{i,t}$$

where: $\Delta\mathrm{REV}_{i,t}$ is the change in revenue (total sales) of firm *i* in event year *t*. $\mathrm{PPE}_{i,t}$ is the gross property, plant and equipment of firm *i* at the end of event year *t*;

In the second stage, the estimated coefficients from Equation 2-4 represented as $\widehat{\alpha}$, $\widehat{\beta_1}$ and $\widehat{\beta_2}$, are used to calculate abnormal accruals for all firms:

Equation 2-5

$$AA_{i,t} = \frac{TA_{i,t}}{A_{i,t-1}} - \left[\hat{\alpha} + \widehat{\beta_1}\frac{\Delta REV_{i,t}}{A_{i,t-1}} + \widehat{\beta_2}\frac{PPE_{i,t}}{A_{i,t-1}}\right]$$

where: $\mathrm{AA}_{i,t}$ denotes the abnormal accruals of firm *i* in event year *t.* Jones (1991) supposes that all turnover are normal.

2.3.1.3 Modifications to the Jones model

2.3.1.3.1 The modified Jones model

Dechow et al. (1995) point out the limitation of the Jones model in the ability to detect the influence of sales-based inflation supposing that difference in sales cause an increase in normal accruals. In the first stage, the modified Jones and Jones models are similar**,** when total accruals are regressed on ∆REV and PPE. However, the modified Jones model eliminates changes in receivables (∆REC) from changes in sales in the second stage. The modified Jones model assumes earnings management results from changes in credit sales. The reason is that it is more challenging to engage in earnings management through cash sales than credit sales. Therefore, abnormal accruals generated by the modified Jones model should no longer to be too small when revenues are managed.

Using the modified Jones model, the parameters $\hat{\alpha}$, $\widehat{\beta_1}$ and $\widehat{\beta_2}$ are estimated by Equation 2-4 as specified by the Jones model. Then, the estimated coefficients are employed to measure the abnormal accruals (AA) as follows:

Equation 2-6

$$AA_{i,t} = \frac{TA_{i,t}}{A_{i,t-1}} - \left[\hat{\alpha} + \widehat{\beta_1}\frac{\Delta REV_{i,t} - \Delta REC_{i,t}}{A_{i,t-1}} + \widehat{\beta_2}\frac{PPE_{i,t}}{A_{i,t-1}}\right]$$

Dechow et al. (1995) compare the Jones model and the Jones modified version and find that the latter gives a significantly better result. However, the effectiveness of neither model can be guaranteed. The tests these models perform have low power to detect earnings management, because these models have high standard errors (Dechow et al. 1995). Moreover, they appear to be poorly specified in the measurement of earnings management in cases of extreme financial performance (Dechow et al. 1995).

2.3.1.3.2 The Forward-Looking model

Dechow et al. (1995) take the view that current sales growth is positively correlated with discretionary accruals by assuming that all credit sales in each period are abnormal. Dechow et al. (2003) modify the modified Jones model by adjusting the expected change in credit sales. They run the following model for each industry year:

Equation 2-7

$$\Delta REC_{i,t} = \alpha + k\Delta REV_{i,t} + \varepsilon$$

where: $\Delta\mathrm{REC}$ denotes changes in receivables and $\Delta\mathrm{REV}$ changes in revenues. *k* is the coefficient of changes in revenues, capturing the expected changes in accounts receivable.

To apply the modified Jones model, they include the unexpected changes in receivable in abnormal accruals. The forward-looking Jones model is as follows:

Equation 2-8

$$TA_{it} = \alpha + \beta_1((1+k)\Delta Sales_{it}) + \beta_2 PPE_{it} + \beta_3 TA_{it-1} + \beta_4 GR\_Sales_{it} + \varepsilon_{it}$$

where: $\mathrm{GR\_Sales}$ is the sales growth in next period, which is the difference in sales from the current period to the next period scaled by current sales; *i* is firm and *t* is year; ε_{it} is the residual term, which is treated as abnormal accruals.

2.3.1.3.3 Performance-adjusted models

There are several studies showing evidence that firm performance is correlated with discretionary accruals (Jeter and Shivakumar 1999; Kasznik 1999; Kothari et al. 2005). It has been demostrated that firms have positive (negative) shocks to earnings, which lead to positive (negative) discretionary accruals (McNichols 2000). Therefore, research measuring earnings management needs to take into consideration unusual performance because it will significantly affect earnings management.

2.3.1.3.3.1 Kang and Sivaramakrishnan model

Kang and Sivaramakrishnan (1995) extend the methodological boundaries by proposing an instrumental variables approach to develop an accruals model. They develop an accruals model which uses not only sales but also operating expenses and cost of goods sold as regressors to mitigate the omitted variables problem. Kang and Sivaramakrishnan (1995) show that expenses are more likely to be related to current liabilities, while revenues are less likely related to be related to current liabilities. Consequently, if expenses are omitted, it will lead to large positive abnormal accruals. Kang and Sivaramakrishnan (1995)'s model is as follows:

Equation 2-9

$$AB_{i,t} = \emptyset_0 + \emptyset_1(\frac{AR_{i,t-1}}{REV_{i,t-1}} * REV_{i,t}) + \emptyset_2(\frac{APB_{i,t-1}}{EXP_{i,t-1}} * EXP_{i,t}) + \emptyset_3(\frac{DEP_{i,t-1}}{GPPE_{i,t-1}} * GPPE_{i,t}) + \varepsilon_{i,t}$$

where: $\mathrm{AB_{i,t}}$ is the accruals balance of firm *i* in year *t,* for which $\mathrm{AB_{i,t}}$= $\mathrm{AR_{i,t}}$ + $\mathrm{INV_{i,t}}$ + $\mathrm{OCA_{i,t}}$ - $\mathrm{CL_{i,t}}$ - $\mathrm{DEP_{i,t}}$; $\mathrm{AR_{i,t-1}}$ denotes the receivables of firm *i* in year *t*-1; $\mathrm{APB_{i,t-1}}$ is the aggregated accruals of firm *i* in year *t*-1, with $\mathrm{APB_{i,t-1}}$= $\mathrm{INV_{i,t-1}}$ + $\mathrm{OCA_{i,t-1}}$ - $\mathrm{CL_{i,t-1}}$; $\mathrm{INV_{i,t-1}}$ is the inventory accruals of firm *i* at the end of year *t*-1; $\mathrm{OCA_{i,t-1}}$ is other non-cash current asset accruals of firm *i* in year *t*-1*;* $\mathrm{CL_{i,t-1}}$ is current liability accruals of firm *i* at the end of year *t*-1*;* $\mathrm{EXP_{i,t-1}}$ denotes the operating expenses of firm *i in* year *t*-1*;* $\mathrm{GPPE_{i,t-1}}$ is gross PPE of firm *i* at the end of year *t*-1; $\mathrm{DEP_{i,t-1}}$ is the depreciation expenses of firm *i* in year *t*-1*.*

Ronen and Yaari (2008) argue that Kang and Sivaramakrishnan (1995)'s model take a different approach compared with previous models by separating expenses, revenues and assets. Kang and Sivaramakrishnan (1995) also match transactions of these variables to the working capital accruals. Compared to the modified Jones model, Kang and Sivaramakrishnan (1995)'s approach is more capable of dealing with omitted variables, measurement error and simultaneity problems. However, there is limitation in this model related to problems on applications designed for the simultaneous equations approach, which restricts the ability of other researchers to apply it (Fields et al. 2001).

2.3.1.3.3.2 The cash-flow model

Dechow and Dichev (2002) argue that working capital which generally occurs within one year is related to cash flow realizations. Therefore, they introduce the cash-flow model which focuses on working capital accruals by regressing working capital accruals with past, current and future cash from operations. The cash-flow model is presented as follows:

Equation 2-10

$$\frac{\Delta WC_{i,t}}{A_{i,t}} = b_0 + b_1\left(\frac{CF_{i,t-1}}{A_{i,t}}\right) + b_2\left(\frac{CF_{i,t}}{A_{i,t}}\right) + b_3\left(\frac{CF_{i,t+1}}{A_{i,t}}\right) + \varepsilon_{i,t}$$

where $\Delta \mathrm{WC}_{\mathrm{i,t}}$ is the change in working capital of firm *i* in year *t*; $\mathrm{CF}_{\mathrm{i,t-1}}$ is cash flow from operations of firm *i* in year *t*-1; $\mathrm{CF}_{\mathrm{i,t}}$ cash flow from operations of firm *i* in year *t*; and $\mathrm{CF}_{\mathrm{i,t+1}}$ are cash flow from operations of firm *i* in year *t*+1;

The unknown changes of working capital accruals (residuals) in the cash flow model is a proxy of earnings quality, which means a greater unknown changes indicates lower earnings quality (Francis and Wang 2008). The cash flow model is based on the logic that the level of accuracy in predicting cash flows relates to accruals quality (Ronen and Yaari 2008). Therefore, Dechow and Dichev (2002) argue that firms will face higher accrual estimation errors if they have high variability in cash flows.

2.3.1.3.3.3 The performance modified model

Previous research shows evidence that a firm's past and contemporaneous performance are correlated with accruals (Dechow et al. 1995; Guay et al. 1996; Healy 1996; Barth et al. 2001), but performance is not controlled in the Jones and modified-Jones models. Therefore, these models could be misspecified and biased in estimating discretionary accruals if firms experience extreme performance, leading to an increased likelihood that discretionary accruals are non-zero. Kothari et al. (2005) suggest that there is a need to control for the effect of past and current years' performance (return on assets [ROA]) on estimated discretionary accruals. Therefore, they develop the performance control model, using two different approaches employing ROA to further modify the modified Jones model.

The first approach is to add current performance (ROA) or past performance (lagged ROA) to the modified Jones model as regressors for calculating normal accruals. The first approach is presented as follows:

Equation 2-11

$$\frac{NA_{i,t}}{A_{i,t-1}} = \alpha + \beta_1(\frac{1}{A_{i,t-1}}) + \beta_2(\frac{\Delta REV_{i,t} - \Delta REC_{i,t}}{A_{i,t-1}}) + \beta_3\ (\frac{PPE_{i,t}}{A_{i,t-1}}) + \beta_4 ROA_{i,t-1} + \varepsilon_{i,t}$$

Where: $\mathrm{ROA}_{\mathrm{i,t-1}}$ is the profit before extraordinary items of firm *i* in year *t*-1 divided by the total assets of firm *i* in year *t*-1.

The second approach in controlling for the impact of companies' performance on abnormal accruals is to change the way to calculate companies' abnormal accruals. Kothari et al. (2005) base on the closest ROA to match a target company with another company that is in the same year and industry, then subtract the target company's abnormal accruals from the matched company's abnormal accruals. Under this approach, abnormal accruals calculated by the modified Jones model, the performance matching model would mitigate misspecification in the sample with extreme ROA (Dechow et al. 2010a).

2.3.1.4 Alternative methodologies

Previous research shows that aggregate accruals models are widely employed. However, there are alternative methodologies that can be employed to investigate earnings management (McNichols 2000). The first alternative methodology is used to detect managerial discretion through modelling the behaviour of a set of accruals or a specific accrual. The studies which engage this methodology usually focus on a specific industry, such as banking (Wahlen 1994; Cornett et al. 2009; Ahn and Choi 2009), or insurance and property (Beaver et al. 2003; Gaver and Paterson 2004). The second alternative methodology is called the non-accruals model, which detect earnings management by investigating the statistical properties of earnings (Burgstahler and Dichev 1997; Burgstahler and Eames 2006; Kerstein and Rai 2007).

This section discusses the earnings management measures used under such approaches.

2.3.1.4.1 The single account approach

There is a relatively small body of literature that focus on the single accrual approach (McNichols 2000; Healy and Wahlen 1999). Most of the research on earnings management relies on total accruals rather than single accruals to detect earnings management. However, the single accrual approach is still attractive because it shows us how managers engage in earnings management, while another approach speculates on how it was done (Healy and Wahlen 1999). Similar to the aggregate (total) accruals research, the specific accruals approach decomposes accruals into discretionary and non-discretionary components.

Some research uses a specific accrual to examine earnings management, such as depreciation (Teoh et al. 1998c), deferred tax (Phillips et al. 2003), and bad debt provisions (McNichols and Wilson 1988). For example, with debt provision research, McNichols and Wilson (1988) examine whether companies with bad debts tend to smooth earnings through the provisioning for bad debts or whether companies take a bath if the companies have an extremely high or low earnings. McNichols and Wilson (1988) employ a regression that the expected provision for bad debts is the dependent variable and the independent variables include the write-offs of the current and next periods and the allowance for bad debts. Their measure of manipulation accounting is the residual provision for bad debts, ε_t, generated from the following regression:

Equation 2-12

$$Prov_{i,t} = \alpha_0 + \alpha_1 BgBl_{i,t} + \alpha_2 Writeoff_{i,t} + \alpha_3 Writeoff_{i,t+1} + \varepsilon_{i,t}$$

where $\mathrm{Prov_{i,t}}$ is the provision for bad debt of firm *i* in year *t*; $\mathrm{BgBl_{i,t}}$ is the beginning balance in the allowance for bad debts of firm *i* in year *t*; $\mathrm{Writeoff_{i,t}}$ is the write-offs of firm *i* in year *t*; $\mathrm{Writeoff_{i,t+1}}$ is the write-offs of firm *i* in year *t*; and $\varepsilon_{i,t}$ is the error of firm *i* in year *t*.

2.3.1.4.2 Set of accounts approach

Beneish (1997) applies the set of accounts approach to assess the probability of earnings management. The author constructs a non-discretionary probit model which uses several financial variables, such as accounts payable, inventory and receivables. Beneish (1997) examines 15 companies the accounting of which was questioned by news media, and 49 companies violating generally accepted accounting principles (GAAP), as identified by the United States (US) Securities and Exchange Commission (SEC). He compares these companies with companies not identified as GAAP violators, but with increasing sales and large discretionary accruals. Beneish (1997) finds that the median value of earnings inflation on the part of the manipulators (0.099) is significantly higher than that of earnings manipulation by the non-manipulators (0.011).

However, Beneish (1997) concludes that the set of accounts approach has some limitations in detecting earnings management. First, the explanatory power of the set of accounts approach is low because it is not clear which accruals are used to manipulate earnings. Second, the number of firms among which accruals are manipulated is small, thus limiting the generalizability of the findings.

2.3.1.4.3 Distribution approach

Burgstahler and Dichev (1997) develop a non-parametric methodology to estimate the earnings' distribution after engaging in earnings management activities. They analyse the earnings' distribution to identify the occurrence of certain earnings numbers. They examine the discontinuities of the earnings distribution around three thresholds: a zero-earnings year, a year before earnings and analysts' expectations of current year earnings. They find that, in a company with incentives to gain higher earnings than the benchmark, the distributions of earnings observations in the year after the earnings management year present that fewer observations with earnings are lower than the threshold, while more observations with earnings are higher than the threshold.

However, this methodology still presents some concerns. First, it does not address the incentives for management which drive the way in which managers choose specific accruals to achieve earnings benchmarks and how they do so. Second, this design does not support researchers in isolating the accrual components and does not allow them to connect the discretionary component with other variables of interest. Finally, it is not applicable for small samples (McNichols 2000).

2.3.2 Real earnings management activities

There is a large volume of published studies providing the evidence of accrual-based earnings management. However, recently, real earnings management is found to replace accrual-based earnings management by managers (Graham et al. 2005; Bruns and Merchant 2006). There is a reason for this. Whereas, accrual earnings management could be easily detected by auditors (Cohen et al. 2008), real earnings management helps managers mitigate inspection from auditors and regulators.

Real earnings activities are performed by various means, including: reduce costs by decreasing R&D expenses, advertising expenses, sale and administrative expenses; reducing the cost per unit sold by rising the numbers of products made; increase earnings through sales by reducing the product prices (Roychowdhury 2006). The models used to detect real earnings activities are as follows.

2.3.2.1 Discretionary expenses manipulation

Expenses manipulation is related to unexpected reductions in R&D, advertising and selling, general and administrative expenses, etc., for increasing reported earnings. Roychowdhury (2006)'s model for estimating normal discretionary expenses is as follows:

Equation 2-13

$$\frac{DISEXP_{i,t}}{A_{i,t-1}} = \alpha_0 + \alpha_1 \frac{1}{A_{i,t-1}} + \beta \frac{REV_{i,t-1}}{A_{i,t-1}} + \varepsilon_{i,t}$$

where: $\mathrm{DISEXP}_{i,t}$ is the sum of R&D, selling, general and administrative (SG&A) and advertising expenses of firm *i* in year *t*. Abnormal discretionary expenses are the difference between the actual $\mathrm{DISEXP}_{i,t}$ and the normal $\mathrm{DISEXP}_{i,t}$ estimated using the coefficients calculated from Equation 2-13.

2.3.2.2 Sales manipulation

Companies could engage in manipulating sales by providing a greater price discounts to inflate companies' earnings. Sales manipulations may lead to abnormally low cash flows. The Roychowdhury (2006)'s model for estimating normal cash flows from operations is as follows:

Equation 2-14

$$\frac{CF_{i,t}}{A_{i,t-1}} = \alpha_0 + \beta_1 \frac{1}{A_{i,t-1}} + \beta_2 \frac{REV_{i,t}}{A_{i,t-1}} + \beta_3 \frac{\Delta REV_{i,t}}{A_{i,t-1}} + \varepsilon_{i,t}$$

where CF_{it} denotes the net operating cash flows of firm *i* in event year *t*. Abnormal CF is the difference between the actual CF and the normal CF calculated using the coefficients calculated from Equation 2-14.

2.3.2.3 Production cost manipulation

Production cost manipulation is employed for inflating current earnings. Companies could manipulate production activities to rise product units produced and thus decrease the cost per unit sold, consequently manipulate earnings. Production costs is the sum of the cost of goods sold (COGS) and the change in inventory (∆INV) (Roychowdhury 2006). The equation used to calculate normal production costs are as follows:

Equation 2-15

$$\frac{PROD_{i,t}}{A_{i,t-1}} = \alpha_0 + \alpha_1 \frac{1}{A_{i,t-1}} + \beta_1 \frac{REV_{i,t}}{A_{i,t-1}} + \beta_2 \frac{\Delta REV_{i,t}}{A_{i,t-1}} + \beta_3 \frac{\Delta REV_{i,t-1}}{A_{i,t-1}} + \varepsilon_{i,t}$$

where: $\mathrm{PROD}_{i,t}$ denotes the production costs of firm *i* in event year *t,* defined as the cost of goods sold plus change in inventory in year *t*; Abnormal PROD is the difference between the actual PROD and the normal PROD estimated using the coefficients calculated from Equation 2-15.

2.3.3 Benefit and constraints of real and accruals earnings management

The main benefit of accrual-based earnings management is its low cost of management as it occurs when companies exercise judgement in financial statement for increasing or reducing accruals, which indirectly affect the operating cash flow that the managers reserve for future use later. However, there are some constraints on engaging in accrual-based earnings management.

First, accrual-based earnings management is constrained by observation from auditors and regulators (Becker et al. 1998; Graham et al. 2005; Cohen and Zarowin 2010). For example, Becker et al. 1998 find that the high quality auditing affects the reliability of financial reports and constrains accrual-based earnings management. Cohen et al. (2008) find that the level of accrual-based earnings management reduced after the period of Sarbanes-Oxley Act (SOX). SOX is an act that protects outside investors, issued following highly financial scandals. Therefore, companies have avoided engaging in accrual-based earnings management in the post-SOX period. Second, engaging in accrual-based earnings management is restricted by a firm’s accounting flexibility. For example, Barton and Simko (2002) find that the probability of firms inflate accrual-based earnings management is restricted by the extent to which has been used in previous years as the balance sheet accumulates the abnormal accrual from previous periods.

With regard to real earnings management, the benefit is more difficult to track for outsiders because it is covered by daily transactions in companies’ business. For example, firms change the structuring or timing of a business transaction (Cohen and Zarowin 2010). However, the manipulation of earnings through real activities is constrained by economic consequences (Gunny 2010). When a company engages in real earnings management, it will suffer long-term costs because real earnings management leads to a negative impact on cash flow in next years for current year income (Jensen 2005; Roychowdhury 2006; Gunny 2010). For example, current income is reduced by R&D costs and these expenditures may not generate revenues in the current period. The firm may time incurring R&D expenditures in the later period to increase current income. Stein (1989) finds that managers boost near-term income to influence the firm's value assessed by the market' s current assessment even though they sacrifice total cash flows. In a similar vein, Roychowdhury (2006) argues that firms boost total earnings by offering price discounts to meet some short-term target, which could lead to lower level of cash inflows from sales in next years because customers also expect the same low product price in next years.

This section has attempted to provide a brief summary of the literature related to the benefits and constraints of engaging in accrual-based and real earnings managements. Recently, many researchers have shown consistent evidence of the substitution between accrual-based and real earnings managements, depending on the relative benefits and constraints (Cohen et al. 2008; Zang 2012). Ferentinou and Anagnostopoulou (2016) investigate accrual-based and real earnings managements before and after the adoption of the International Financial Reporting Standards (IFRS), and find evidence that firms switch from accrual-based earnings management to real earnings management after IFRS adoption, suggesting that companies shift from accrual-based earnings management to real earnings management to avoid the legislation risk. In this vein, Chi et al. (2011) find that firms with a low audit quality exhibit lower real earnings management than those with a high audit quality.

In general, therefore, it seems that companies may choose to engage in one type of earnings management or both accrual-based and real earnings management to supplement each other depending on their circumstances. In the first case, if the company's main concern is economic consequences of engaging in real earnings management, it may engage in accrual-based earnings management. In the second case, if the company's main concern is scrutiny from auditors and regulators, it may switch from accrual-based earnings management to real earnings management. In the third case, if company balances between economic consequences of engaging in real earnings management and scrutiny from auditors and regulators, it may employ both earnings management to supplement each other. Probably, a study investigates only one type of earnings management, it could lead to a misconclusion. Therefore, this study will investigate both accrual-based and real earnings management.

For investigating accrual-based earnings management, based on the literature review above, this study will employ both Jones and modified Jones models because these models are widely used in empirical research (Botsari 2014; Botsari and Meeks 2008; Chen et al. 2011b; Dechow et al. 1995; Healy 1985; Shivakumar 2000) and remained among the most efficient (Dechow et al. 1995; Peasnell et al. 2000). In term of investigating real earnings management, there are not many built models to detected real earnings management. The real earnings management models developed by (Roychowdhury 2006) to detect real earnings activities are widely used in recently empirical research (Cohen and Zarowin 2010; Kothari et al. 2012; Zhu and Lu 2013; Farooqi et al. 2017). Therefore, this study will employ real earnings management models developed by

(Roychowdhury 2006) to investigate whether or not acquirers engage in real earnings management prior to a merger announcement.

2.4 EARNINGS MANAGEMENT MOTIVATIONS

2.4.1 Debt contracts

Debt contracts are defined as agreements between debt holders and managers (Healy and Palepu 1990). Debt contracts are an essential topic in financial accounting research as debt-holders often use specific financial covenants to regulate companies' activities.

There are two main types of debt covenant limitations, which are affirmative covenants and negative covenants (Healy and Palepu 1990; Press and Weintrop 1990; Sweeney 1994). Negative covenants, such as dividend restrictions, try to stop companies moving wealth from debtholders to shareholders. In contrast, affirmative covenants, such as net worth, interest coverage, and working capital covenants, can contain guarantees by borrowing companies. For instance: the borrowing companies have to agree to maintain financial ratios, pay taxes and insure and maintain assets.

Debt contracts are motivated by positive accounting theory. Watts and Zimmerman (1990) review and assess positive accounting theory following their earlier papers published in 1978 and 1979. Watts and Zimmerman (1978) contributed to the positive accounting literature, bringing an accounting practice explanation related to the essentiality of contracting costs. The 1978 study also led to the identification of some previously unknown empirical regularities. Watts and Zimmerman (1978) tried to eliminate some general misconceptions about the methodology that appeared in debates. The authors also provided ways of developing positive research in accounting. The most essential of these developments comprises tighter connections between the literature and empirical studies. A second development is the improvement of models that verify the endogeneity among variables in regression analysis. A third development is reducing the errors in measurements in both the dependent and independent variables in regression models.

Previous studies show that debt contracts motivate managers to choose an accounting method related to earnings manipulation (Holthausen 1981; Healy and Palepu 1990; Press and Weintrop 1990; Sweeney 1994; Peltier-Rivest 1999; Othman and Zeghal 2006). Othman and Zeghal (2006) examine elements that potentially affect earnings manipulation policy in the cases of Anglo-American and Euro-Continental accounting models. The researchers test earnings manipulation motives using a panel of 1,674 firm-year observations in Canada and 1,470 firm-year observations in France. Canada and France are examples of different socio-economic environments. The earnings manipulation discovered in these nations are impacted by the characteristics of the Euro-Continental and Anglo-American environments. They show that the earnings manipulation motivations by French companies are connected to tax rate and contractual debt. However, companies in Canada have incentives connected to an active capital market. In Canadian companies, companies are highly motivated to engage in earnings management when those companies issue new shares.

Holthausen (1981) investigate the correlation between compensation contracts of management and the provisions of bond agreements to identify earnings management motivations of managers. The author perform empirical research focussing on examining the change in depreciation methods. He find the evidence that the changing in depreciation methods are related to compensation contracts and bond covenants. Healy and Palepu (1990) investigate whether companies that are close to violating their lending covenants make accounting decisions that increase income for avoid cutting dividends. Authors proved that despite the accounting flexibility of management, debt covenants are useful tools for debtholders to limit companies' dividend decisions.

Press and Weintrop (1990) investigate accounting-based limitations in public and private debt agreements of 83 random companies in the US. The authors show ways of identifying significant accounting-based constraints. This study includes a comparison between companies that have accounting-based constraints and companies without, finding that these groups are of similar size and have similar systematic risk, but present large differences in leverage levels. In all, 83 companies in the sample have a positive relationship between indicators for the existence of a leverage constraint and income strategies.

Peltier-Rivest and Swirsky (2000) indicate that earnings manipulation is a favourite subject of positive accounting research due to its significance for a wide range of constituencies. The authors use multivariate regression analysis to investigate the determinants of earnings manipulation in 161 healthy companies, defined as firms that have not faced a loss for five years in a row. The results show that if a healthy company is closer to limitations of the firm's debt covenant, its managers tend to inflate its accruals. Healthy companies also have motives to deflate its accruals when involved in negotiations related to labour with their unions. The results do not support earnings manipulation based on government lobbying or changes in the top executive. These results suggest that the benefits from these types of earnings manipulation for healthy companies are too low to affect the accounting choices of managers.

Beatty and Weber (2003) show the effects of debt contracts on the accounting choices of borrowers. They focus on analysing 125 firms that make material voluntary accounting method changes from 1995 to 2000. They find evidence that when the bank debt contracts allow changes in accounting methods, the borrowers are more likely to inflate accruals. They also find that borrowers permitted to use voluntary accounting method changes are more likely to engage in earnings management if their lending contracts restrict dividend.

In summary, there is emerging evidence concerning the relationships between earnings management and debt contracts, which generally include accounting-based debt covenants. Managers have motivations to engage in earnings management to avoid debt covenant violation or costs related to violating debt covenant, which indicates that earnings might be manipulated by company if the company has a significant amount of leverage (Houmes and Skantz 2010).

2.4.2 Compensation

A number of studies have examined the correlation between firms' earnings management and CEO compensation, CEO compensation contracts or earning-based bonus awards to identify CEO earnings management incentives. Holthausen et al. (1995) examine the present value of bonus payments and earnings management. This study expands the research of Healy (1985), examining executives' managerial accounting decisions to increase their compensation. The results of Holthausen et al. (1995) are in line with Healy (1985), namely that executives deflate earnings if their bonuses reach a highest level. However, there is no evidence that executives deflate earnings if the earnings are less than the lowest level that executives have a bonus.

Guidry et al. (1999) investigate the bonus maximization hypothesis, according to which management makes abnormal accruals decisions to maximize short-term incentives. The authors use a database of the middle (business unit) management and financial reporting of giant conglomerates. Their results are consistent with prior research that middle management manipulates income to maximize short-term bonus plans.

Bergstresser and Philippon (2006) examine the correlation between earnings manipulation and CEO incentives. The “incentive” CEOs are those whose compensation is strongly related to firm’s stock prices. These CEOs may inflate their firms’ earnings. They use accruals measures with sample publicly held corporations and also include financial data based on public findings. The authors find that when the CEO compensation is associated with the value of holdings of stocks and options, CEOs may manipulate reported earnings.

Denis et al. (2006) find a significant and positive relationship between securities fraud allegations and an executive stock option incentive measure. This connection is robust to the inclusion of other compensation structure components and other possible factors related to fraud allegations. Furthermore, the authors find that this relationship is stronger in companies with higher institutional ownership and higher outside block-holders. These results enhance the view that stock options motivate managers to choose fraudulent activity and that this incentive is motivated by institutional and block ownership. This research provides awareness of the complementarities of other corporate governance mechanisms. A new incentive problem can be realized by addressing the fundamental agency problem between managers and stockholders using stock options. These findings show that boards of directors need to balance the positive and negative impacts of option incentives in building optimal compensation packages.

Efendi et al. (2007) examine the motivation leading to the phenomenon of restating financial reports. The authors show that the probability of a misstated financial report is higher if the CEO holds high volumes of stock options or the CEO who is a chairman.

In summary, the literature documents consistent evidence that CEO compensation, especially stock-based compensation, is a determinant of earnings management.

2.4.3 Equity offering

Firms deploy equity offerings through Initial Public Offerings (IPOs) or issuing Seasoned Equity Offerings (SEOs). By doing so, they can raise capital, increase the number of their shareholders and expand their operational activities in the capital markets (Brau and Fawcett 2006). There is a large volume of published studies on whether managers employ earnings management activities to create positive benefit in reported earnings around the time of equity offerings.

Aharony et al. (1993) investigate whether firms manipulate earnings prior to taking their companies public by selecting accounting conventions. The research sample includes 229 industrial firms going public from 1985 to 1987 using both univariate and multivariate analyses. The authors use total accounting accruals following Healy (1985) and DeAngelo (1986) as proxies for earnings management. The study shows that firms selecting reputable underwriters and high-quality auditors when going public may exhibit a lower degree of earnings manipulation, while firms with large financial leverage and small firms may present a high degree of earnings manipulation.

Friedlan (1994) investigates the accounting decisions of IPO issuers before issuing shares. The author argues that issuers' wealth is impacted by the share price, which is set. Therefore, they have a motivation to maximize their offer price. To be able to do so, these issuers often make increasing discretionary accruals in their financial reporting to increase their net income prior to issuing shares. Friedlan (1994) analyses a sample of 155 IPO firms listed in the US, issuing shares with commitment contracts, not including firms in the financial, insurance or real estate sectors, from 1981 to 1984. The study finds that IPO issuers engage in earnings management before the offerings. Firms issuing interim financial reporting undertake income increases in the interim reporting rather than annual statements. The results, therefore, suggest that the information in financial statements affects IPO offering prices.

Teoh et al. (1998c) examine the use of accruals earnings management at the time of IPO to increase earnings opportunistically. They employ a sample of 1,682 IPO firms going public from 1980 to 1990 based on financial data available on Compustat. They use three proxies for earnings management and perform further robustness checks using alternative measures. The first two proxies are gained from accruals which measure some expected benchmarks on firms and characteristics of the industry. The last proxy uses a score for the probability of manipulation of firms using financial ratios. The results suggest that IPO firms often have higher positive earnings, returns on sales and abnormal accruals in the year of issue relative to non-issuers. In subsequent years, it is followed by underperformance of earnings in the long term and negative abnormal accruals. In addition, IPO firms tend to use more methods related to income increasing depreciation, as well as providing significantly less for uncollectible account receivables in comparison with their matched non-issuers.

Teoh et al. (1998a) examine the association between IPOs and long-term post-IPO return underperformance. They use a sample of 1,649 IPO firms from 1980 to 1992 with available Compustat financial data. They find that the issuers have a poor performance in stock return in three years Post-IPOs if they have a high level of earnings management. They categorize the issuers into two types. Accordingly, the IPO issuers with an aggressive quartile in managing earnings experience on average 15–30% worse performance in the three years after for reported earnings than those with a conservative quartile in managing earnings. These differences are economically and statistically significant for different types of specifications. Therefore, this indicates a potential benefit for less aggressive earnings management after IPO.

Roosenboom et al. (2003) investigate the influence of current abnormal accruals for the Dutch IPO market. They argue that managers will manage the earnings of the company in the first year they go public and not in the first year prior to the IPO. The authors use a sample of 37 firms listed on the Parallel Market from 1984 to 1994. They measure long-term share price performance and accruals before and after the IPOs in these companies. They find that when managers tend to engage in over-reporting in the first year of going public, in subsequent years the returns may be poor.

Chen et al. (2005) seek to identify the correlation between the audit quality and earnings management of IPO firms in Taiwan. They use a sample of 367 new issues in the period 1999–2002 in the Taiwan Economic Journal Database. They estimate earnings manipulation of those firms using the modified Jones model.

Then, they go on to measure audit quality by using auditor type and industry specialist. They find that auditor size is related to earnings management. The use of big five auditors is negatively correlated to earnings management in the IPO year.

Suzanne and Christine (2006) examine the influence of venture capitalists (VCs) on the decision to undertake earnings management in IPO. They analyse a sample of 2,630 domestic US IPOs. Their earnings manipulation proxies are abnormal accruals estimated and performance-matched accruals by using the modified Jones model and restatements. They find the evidence that IPO companies with the presence of VCs are linked with a low earnings manipulation. The performance of IPO firms monitored by VCs is better than that of firms without such monitoring.

Using a sample of 393 UK IPOs from 1992 to 1999, Ball and Shivakumar (2008) show that IPO companies improve their financial reporting quality to deal with the requirement of high financial statement standard by regulators and investors. They explain that IPO companies could suffer higher costs for regulators if they engage in earnings management.

Chang et al. (2010) investigate the relation between underwriter reputation and the nature of earnings management in IPO firms. They hypothesize that reputable underwriters will audit and certify the financial data of IPO firms more carefully to restrict any manipulation of earnings and thus protect their reputation. Consequently, increases in abnormal accruals in IPO firms underwritten by less reputable underwriters may represent the possibility of earnings manipulation. The authors use a sample of 2,053 stock offerings for US firms from 1989 to 2003 and measure the magnitude of earnings management through current discretionary accruals and adjusted discretionary current accruals. They find that IPO firms with more reputable underwriters present a low level of aggression in earnings management. However, there is an insignificant relation between post-IPO performance and earnings management in firms with more reputable underwriters.

Lee and Masulis (2011) investigate the participation of financial intermediaries in the IPO process and their role in restraining earnings management. The authors analyse 1,346 IPOs among US issuers in the SDC New Issue database from 1993 to 2004. The results suggest that the reduction in earnings management is stronger if the company have more reputable venture capital and investment banks. This shows that there is a very complementary relation between them rather than substitutive. These VC investors and investment banks also enhance the certification and monitoring of financial reporting by IPO issuers.

Armstrong et al. (2009) examine the properties of discretionary accruals around IPO. They use a larger dataset employing pre-IPO financial statement information for over 1,500 companies. In contrast to previous studies, the results show the evidence that earnings manipulation around IPOs is less prevalent and there are lower economic and empirical impacts than portrayed in the literature. They find that pre-IPO discretionary accruals are reliably negative. Firms with high and low discretionary accruals have the same rate of mean reversion in performance. These firms also have the same abnormal returns after controlling for cash flow. They also investigate the incentives for earnings management in IPO and find that executive compensation is reduced when issuers engage in earnings management. They finally document that the amount of associated damages and the probability of litigation is greater for issuers engaging in earnings management.

Rangan (1998) examines the relationship between earnings manipulation around the time of the SEO and poor performance in post-SEO. This research is based on the results of previous studies that companies conducting SEOs experience low share prices and negative returns on shares in the post-offering period. The author uses 230 SEOs from 1987 to 1990 and finds that earnings manipulation during the year around the offering leads both to changes in earnings and market adjustment in stock returns in following year. They explain that after the offering, companies need to reverse the discretionary accruals, leading to decreased earnings. Consequently, the market will react to the earnings decline by correcting its valuation errors. They conclude that the offering firms are able to manipulate their stock price by managing their earnings.

Cohen and Zarowin (2010) examine earnings behaviour around SEOs for both accrual-based and real earnings management activities. The authors use a sample of 1,511 completed US offers from SDC New Issue database from 1987 to 2006. They measure accruals earnings management following Jones (1991) and real earnings management following Roychowdhury (2006). The results suggest that firms use both real and accrual-based earnings management activities around SEOs. They also investigate how accrual earnings management and real earnings management effects the operating performance of the firms after SEO and find that the reduction in performance is more severe with real earnings management than accruals management.

In conclusion, the majority of the prior research shows evidence that IPO or SEO firms have motivations to manipulate their earnings prior to the offering to rise the stock price. The size of IPO or SEO firms and the participation of financial intermediaries such as investment banks (underwriters) or VCs have different effects on the earnings management behaviours of IPO or SEO firms. Also, IPO or SEO firms which engage in earnings management before the offering often experience poor share performance in subsequent years.

2.4.4 Regulation motivations

There is a large volume of published studies on the effect of regulations on earnings management. The literature shows that earnings management is motivated by regulation, such as industry-specific regulations, antitrust regulations, tax regulations, price control regulations or stock exchange regulations. These regulatory rules can put pressure on firms, leading them to engage in earnings management. Depending on the regulations, firms could report either decreasing or increasing earnings to protect their benefits.

Cahan (1992) investigates the correlations between monopoly-related antitrust investigations and the reporting of firms' earnings. The author analyses 48 firms investigated from 1970 to 1983 for monopoly-related violations. The results suggest that managers adjust earnings using discretionary accruals to deal with monopoly-related antitrust investigations. Management tends to decrease the probability of an unfavourable ruling and associated costs by using accounting procedures to report abnormally low income.

Collins et al. (1995) analyse the relation between bank-specific regulation in making capital-raising decisions and financial reporting and/or tax incentives. The research is based on analysing a sample of 160 banks with available data from 1971 to 1991 from Bank Compustat annual data files. The authors find that profitable banks engage in earnings management using loan loss provisions. Banks with high (low) growth issue common stocks consistent with capital (tax) management.

Cahan et al. (1997) investigate earnings management among chemical firms in response to environmental regulations in 1979, when Congress was considering enacting the Comprehensive Environmental Response. They use a sample of 43 firms with the potential for being subjected to cost exposure resulting from the regulations and use several continuous measures to measure the political costs resulting from the legislation. They find that these firms present significant income-decreasing discretionary accruals in 1979, but not in the preceding year. The results suggest that firms subject to the greatest harm from legislation will tend to take drastic measures to reduce the effect to the minimal level.

Key (1997) examines political cost theory by analysing the cable television industry within the period of Congressional scrutiny. Discretionary accruals are applied to measure earnings management. The author finds that income-decreasing accruals in the companies for which the proposed regulations are expected to be more catastrophic are higher than in others.

Hall and Stammerjohan (1997) study the correlation between litigation events, managers' accounting choices and the possibility of large damage awards. They hypothesize that the level of damage awards is a function of reported net worth and net income. The correlation between net income and net worth drives management to manipulate accounting numbers. Therefore, managers have the motivation to engage in earnings management. The sample in their paper includes all selected firms belonging to the top 20 largest oil companies in terms of total assets in the Compustat data file during the period 1974 and 1992. The results are consistent with the hypothesis that oil companies facing large damage awards manage non-working capital accruals downward relative to other oil companies.

Magnan et al. (1999) investigate whether Canadian firms launching an antidumping complaint against foreign competitors reduce reported earnings during the period of investigation by the Canadian External Trade Tribunal. The sample data consist of 17 Canadian firms involved in 14 antidumping investigations during the period 1976 to 1992. The results of the study indicate that during the period of investigation of antidumping, the reported earnings of Canadian firms significantly decrease.

Patten and Trompeter (2003) investigate the correlation between pre-event environmental disclosure and the degree of earnings manipulation as a result of a regulatory threat. The sample includes 40 companies likely to be affected by regulatory threat arising from the chemical leak at Union Carbide’s Bhopal plant in India in December 1984. The results show remarkable negative discretionary accruals for all companies in the sample.

Bowman and Navissi (2003) examine the correlation between abnormal returns and earnings management in relation to price control regulations which control increases in commodity price for manufacturing firms. They find that firms engage in income-decreasing accruals to obtain approval for the commodity price increase. The results also show that firms turn towards more aggressive practices in engaging in income-decreasing accruals if they are affected most negatively by the price control regulations.

Gill-de-Albornoz and Illueca (2005) study the accounting policy of Spanish electricity firms under the impact of price regulation. According to the political cost hypothesis, an increase in the tariff leads to reductions in reported earnings. The empirical data for this research include all electricity firms in Spain quoted in the period 1991–2001. Discretionary accruals are used to proxy managers’ accounting discretion. The results of this study confirm the effect of political costs on the accounting policy of firms.

Garrod et al. (2007) aim to identify which economic incentives modify political costs affecting accounting choices. This research uses a sample of 25,740 small private firms in Slovenia, within which 96.446% have a maximum of 10 owners. The results of this study identify that profitable companies are unable to reduce current corporate tax, even though they manage earnings downward. The reason is the increased possibility of a tax audit, constraining the elimination of the tax. Moreover, this political cost also encourages companies without tax obligations in the current period to adopt earning-increasing accounting policies.

In summary, there is emerging evidence that regulation is a determinant of earnings management. Most the research on the impact of regulation on earnings management investigates a particular industry, such as: the relation between bank-specific regulation and financial reporting and/or tax incentives (Collins et al. 1995), earnings management among chemical firms in response to environmental regulations in 1979 (Cahan et al. 1997), the accounting policy of Spanish electricity companies under the impact of price regulation (Gill-de-Albornoz and Illueca 2005).

2.4.5 Earnings benchmarks

Earnings benchmarks have been used as essential reference points for firms' financial information by stakeholders to evaluate performance and firms' financial position. Therefore, managers attempt to meet or beat earnings benchmarks to avoid a negative effect on stock performance or reputation of management. To be specific, if the earnings expected by stakeholders fall short of the desired threshold, firms tend to manipulate earnings to meet the earnings benchmarks.

There is a body of research that finds firms manipulate earnings to meet or beat various earnings benchmarks in a range of ways, such as: (i) avoiding reporting decreases in earnings; (ii) avoiding reporting losses; (iii) meeting analysts' forecasts.

Burgstahler and Dichev (1997) find that the companies can manipulate their earnings in financial reports to minimize losses and avoid reducing in earnings. They find that around 30–44% of companies having slight negative pre-managed earnings engage in earnings management to have a positive earnings report. They explain that the reason for avoiding decreases in earnings and minimizing losses is that the firms wish to avoid costs related to transactions with stakeholders because if firms report a decrease in earnings, they could face high costs.

Degeorge et al. (1999) examine the correlation between earnings thresholds and earnings management. They find clear evidence that firm's earnings management is driven by three thresholds: (i) reporting positive profits; (ii) sustaining recent performance; (iii) meeting analysts' expectations. The results also show that the firm's priority is to show positive profits, then to report quarterly profits at least equal to the profits in the same quarter in the previous year and finally to meet analysts' expectations. In addition, they find that the future performance of firms that just meet these thresholds will be lower than that of less suspect control firms.

Roychowdhury (2006) finds that managers using real earnings management to minimize losses. Specifically, author shows that managers use price discounts to temporarily increase sales, overproduction to lower the cost of goods sold and cutting down abnormal expenses to improve profit margins. The author also finds other factors that affect real earnings manipulation, such as inventory and receivables. They also find that companies manipulate real earnings management to meet analysts' forecasts.

Huang et al. (2012) study the relationship between the age of the CEO and the quality of financial reporting of companies. The quality of financial reporting in this paper is based on meeting or beating analysts' earnings forecasts and financial manipulation. The authors hypothesize that older CEOs are related to higher quality financial reports. This research uses a sample of 3,414 companies from 2005 to 2008 and finds a positive relationship between CEO age and financial reporting quality. In particular, the researchers find that CEO age has a negative association with companies meeting or beating analysts' earnings forecasts and financial manipulation. These results suggest that older CEOs are less likely to manipulate earnings in meeting or beating analysts' earnings predictions and older CEOs are less likely to be linked to financial manipulation.

In general, the existing literature documents that firms engage in earnings management to meet or beat earnings benchmarks, such as prior years' earnings, zero earnings and analysts' earnings forecasts.

2.4.6 Mergers and acquisitions motivation for earnings management

The literature finds consistent evidence that prior to a share for share bid, firms manage earnings to inflate share prices so that they can pay less for M&A deals (Erickson and Wang 1999; Louis 2004; Koumanakos et al. 2005; Gong et al. 2008; Botsari and Meeks 2008). The literature review of earnings management motivated by M&A will be presented in Section 3.2.1 in Chapter 3.

To summarize, there are many motivations of earnings management. This thesis focuses on earnings management motivated by M&A activities. Previous research (Dechow et al. 1995; Dechow et al. 2011; Amiram et al. 2015) argues that earnings management models are subject to criticism, so it is important to know whether the existing evidence indeed suggests the presence of earnings management or is it just the result of measurement errors. Therefore, this study, first, applies Benford's Law to reinvestigate the earnings management of acquirers prior to a merger announcement. Second, this study extends on the literature by investigating the effect of board connections and CEO characteristics on earnings management prior to the merger announcement.

2.5 MERGERS AND ACQUISITIONS

2.5.1 Mergers and acquisitions definition

Financial Reporting Standard 102 (FRS-102) includes accounting practices, encompassing the regulations with respect to business combinations beginning on or after 1 January 2015. The definition of merger in FRS-102 is as follows:

> *"A business combination is the bringing together of separate entities or businesses into one reporting entity. The result of nearly all business combinations is that one entity, the acquirer, obtains control of one or more other businesses, the acquiree. The acquisition date is the date on which the acquirer obtains control of the acquiree"*.

The general idea of FRS-102 is that a business combination constitutes the combining of many different independent companies into a distinct company, which results from the uniting or taking control over assets or operation of one entity by another. FRS 102 also mentions that M&A may be affected by the transfer of equity, cash or mixture. The M&A transactions might be between the shareholders of one entity or combining with the shareholders of another entity. Acquirers may also establish a new entity to control the merger.

2.5.2 Methods of payments

There are three methods for conducting takeover transactions: cash, stock for stock exchange, or a mixture of these. Each method has its pros and cons.

Under the cash method, the first advantage is that there is no change in the level of control in the company for the acquirer's shareholders. This is important when the shareholders in acquiring companies want to maintain their control (Jensen 1991; Faccio and Masulis 2005). Second, using cash as the payment method is simple and precise, creating the opportunity of success. The other two ways carry uncertainty about the true values and therefore cash payment, with its real value, has a high probability to be chosen by vendors, especially in volatile markets (Travlos 1987; Loughran and Vijh 1997). However, payment by cash still has some disadvantages related to tax. The target shareholders may be subject to paying capital gains tax (CGT) (Hansen 1987). They have to pay when the gains are realized at a rate depending on the specific country. In contrast, in share transactions, when the target shareholders receive shares from the acquiring companies, their investment gain is considered to be unrealized and they are not liable to pay CGT at that time. They can defer tax payment until the time of the sale of the new shares if they earn a capital gain in total.

Turning to payment by shares, there are some advantages. First, the target shareholders who receive shares in acquiring transactions can defer CGT as the investment gain is unrealised (Hansen 1987; Faccio and Masulis 2005). Second, target shareholders have to share the risk with the acquirer' shareholders if the target is overvalued (Hansen 1987). Third, from the view of the acquirer, there is no immediate effect on the cash outflow. In contrast, it is also important for the firm to consider the capital structure and dilution of existing shareholders' position (Faccio and Masulis 2005). Finally, using shares can improve the price/ earnings (P/E) ratio. Arnold (2005) conclude that the share price can increase even though there is no economic gain from the merger.

Regarding a mixture of cash and share payment, the main advantage of this payment method is that the acquirers can share risk of the acquisition with the target shareholders. The percentage of share payment in the mixture of share and cash payment shows the extent of confidence on the part of the management of the acquirers in evaluating the benefits of the acquisition.

The choice of payment method depends entirely on acquirers' and targets' motivation and legal protection for investors. With regard to acquirers' and targets' interests, Erickson and Wang (1999) state that in M&A, the management has an incentive to increase the price of the acquirers' share by managing the pre-merger reported earnings in upward trends to be able to acquire the target at a lower price for stock mergers. In terms of legal protection for investors, in countries with less legal protection for investors, selling firms choose cash for the takeover to avoid becoming minority shareholders. Accordingly, there is more cash-financed deals and less share-financed deals in such nations.

2.5.3 Motives for mergers and acquisitions

2.5.3.1 Synergy and monopolistic power

The synergy motive is when the purpose of M&A is to create a new combined firm such that the value and performance of the new merged company will be greater than that of the acquiring and target companies operating independently (Bradley et al. 1988; Seth et al. 2000). Three types of synergy motive have been classified in the literature: operational synergy, managerial synergy and financial synergy.

2.5.3.1.1 Operating synergy

Economies of scale and scope or monopolistic power could be major determinants of the operational synergy motive. The unit cost of production will decrease when a firm reaches certain economies of scale (Sudarsanam 2003). Therefore, a combination of several product lines in two firms helps to produce products which are less cost than those products are separately produced in the acquiring and target companies. Regarding economies of scope, the new combined firm can achieve economies by using assets or skills from target firms which were already employed to make a special product or service (Berger et al. 1999; Lewis and Webb 2007). In terms of monopolistic power, the new combined firm can be formed based on the desire of acquirers to create market power (Stigler 1964). Therefore, the new combined firm can reduce industry competition and in less competitive markets the new firm can increase the prices of its products and services, thus increasing the shareholders' wealth (Blair and Harrison 1993).

The operational synergy motive is supported by the results of some empirical studies. Trautwein (1990) studies theories of acquisition motivations and connects them to prescriptions for acquisition strategies. They finding evidence supporting theories of valuation, managerial empire building and process effects, rather than those related to efficiency gains or monopolistic power. Moreover, Mukherjee et al. (2004) research the motives for mergers as well as divestitures and the methods used to value targets from 1990 to 2001. The survey result shows that the primary motive for mergers is to achieve operating synergies, whereas the primary reason for divestitures is to enhance focus. The evidence also shows that most companies believe diversification is a reasonable motivation for mergers, which are a tool for reducing losses during economic crisis.

2.5.3.1.2 Managerial motive

The managerial synergy motive can arise when acquirers have an efficient management team. In this case, acquirers can buy the right to control (and manage) targets with inefficient managers (Manne 1965). Since such acquirers create managerial synergy by controlling the inefficient firm, they may able to prevent the possibility of bankruptcy for the inefficient target and create wealth for both the acquirer and target shareholders.

Lang et al. (1989) are among the empirical studies on the managerial synergy motive. They use a sample of successful tender offers and find that stockholders of acquiring firms with high Tobin's Q receive higher benefits than stockholders of acquiring firms with low Tobin's Q. In contrast, stockholders of targets with low Tobin's Q can receive higher benefits than stockholders of targets with high Tobin's Q. The results of this study are consistent with the view that mergers of poorly managed targets and well-managed acquirers bring high total gains. The results also show that well-managed targets receive fewer benefits than poorly managed targets in acquisitions.

2.5.3.1.3 Financial motive

Financial synergy can arise when the acquisitions results in a lower cost of capital for the newly merging company. There are various types of financial synergy motive. First, the cost of capital of the newly merging firm is reduced by gaining the benefits of debt financing such as tax savings (Graham 2000). For example, if there is any unused debt capacity in target firms or acquirers, consequently, the newly merging company have a much higher debt capacity. Therefore, the newly merging firm could gain various tax benefits. Second, there will be more resources resulting from the new combination when the acquirer or target firms have plenty of financial resources (Sudarsanam et al. 1996).

Shih (1994) introduces a model demonstrating a tax motivation for conglomerate acquisitions. Conglomerate acquisitions are mergers between companies in which one firm has poor projected performance in the future; the other tends to overperform. According to the author, by combining such companies into common taxable firms, conglomerate mergers bring various tax benefits. First, they enhance the opportunity for tax write-offs in the future and the credits will be put to use immediately in full rather than deferred as less valuable tax loss carry-forwards. Second, such mergers reduce the chance that tax write-offs and credits are permanently lost because of bankruptcy. Finally, they increase the possibility of writing off the interest on the additional debt. There is empirical evidence that supports these hypotheses. The changes to US tax law in 1981 and 1986 encouraged and discouraged acquisition activity respectively. Cross-sectional testing of US acquisitions shows that acquisitions tend to enhance the combined leverage when the incomes of joining companies are less highly correlated. Non-tax-related bankruptcy expenses are not explicitly modelled, but companies with high potential tax write-offs and credits are likely to have a lower preference for leverage. As a result, in many cases the diminishing bankruptcy risk is not a motivation for conglomerate mergers, but full use of tax write-offs is such a motive.

Fluck and Lynch (1999) propose a theory of mergers and divestitures wherein the motivations for mergers lie in the inability for a company to be marginally profitable. A merger can be used as a tool to resolve the difficulties of financing when a company stands alone. A conglomerate merger can help the company to obtain financial resources and survive in periods of distress. If the profitability of the company improves and the need for financing ends, the acquirer divests its assets to reduce coordination expenses.

2.5.3.2 The agency hypothesis

Agency theory is a fundamental proposition in modern corporate finance literature. Managers primarily make decisions to benefit themselves, even if these decisions could lead to destroying the wealth of shareholders (Jensen 1986). In the M&A context, the incumbent managers are motivated to implement takeovers by their self-interest (Goergen and Renneboog 2004). For example, acquirer managers may primarily make decisions that provide them with more prestige and power, based on diversification, size and growth (Guidry et al. 1999), while shareholders are more likely to be interested in the actions that help increase their stock prices and the profitability of their firm.

The agency motive is supported by the evidences of various empirical research. Berkovitch and Narayanan (1993) show that acquirer managers take over the target that enhances the dependence of the merger firms on their own skills and knowledge, even when such M&A can reduce the wealth of the acquirers' shareholders. For example, "specialist" acquirer managers are more likely to acquire target firms which are in their own lines of business, so that the future prospects of the combined firm continuously depend on their “specialist” knowledge and skills.

Hartzell et al. (2004) are motivated by agency conflict problems in mergers and acquisitions. They study the benefits received by CEOs of target firms in M&A. The authors find that benefits received CEOs of target firms increase and are almost from share. CEOs also receive financial benefits at last-minute when the board of directors approve the mergers, e.g. an increase 12% in their golden parachutes and 28% in additional cash bonuses. Researchers show that last-minute cash payments positively correlate to the prior excess compensation of CEOs of target firms and these kinds of payments is an import factor in negotiating M&A. This study also finds that target stockholders receive lower merger benefits in the case that includes large payment to CEO.

2.5.3.3 The Hubris hypothesis

The hubris motive proposes that M&A activities are motived by overconfidence and overestimating the gains from M&A. Therefore, the takeovers may take place and there might be an overpayment for the targets. Consequently, the synergy gain is zero (Roll 1986). The hubris hypothesis is also explained by the “winners curse” theory, which describes that the winning acquirers suffer a high cost for paying target firms that have a low value (DePamphilis 2009). The reason is that there are many companies take place in the auction, it leads to be more complicated in valuating target’ value. Consequently, the winner might pay a higher price than target’s the actual value.

Sudarsanam et al. (1996) explain the wealth experience of the acquirer and target shareholders regarding the synergy and ownership structure while controlling for the acquire dynamics variables. The results prove that combination between companies with a supportive of liquidity slack and surplus investment chances creates value for shareholders from both sides. However, when highly evaluated companies buy less highly evaluated targets, the acquirer shareholders experience wealth decreases while target shareholders experience wealth increases. This finding is consistent with acquiring management's acting out of hubris.

Mathew and Hambrick (1997) investigate the role of a CEO's hubris in explaining the large premiums paid for M&A. The authors use a sample of 106 large merger transactions from 1989 to 1992 and find that four indicators of CEO exaggerated self-confidence have a strong relationship with the size of the premium paid. The indicators are the recent performance of the acquirer, CEO's press coverage, an evaluation how importance of CEO in company and an indicator which combines these factors. They find that the correlation between CEO hubris and premiums is more significant when a low percentage of internal directors are not in board. They also find that acquirers face higher losses if CEO hubris and merger premiums are high. As a result, CEO hubris has its practical consequences and exerts a great influence on strategic behaviour.

Mueller and Sirower (2003) provide support for hypotheses concerning how acquisitions increase or do not increase the acquirers' and targets' values. The study conducts a method based on using the losing and gaining distribution over company samples and tests these distributions under four hypotheses regarding the causes of acquisitions: (i) the hubris hypothesis; (ii) the managerial discretion hypothesis; (iii) the synergy hypothesis; (iv) the market-for-corporate-control hypothesis. Mueller and Sirower (2003) use data from 168 acquisitions from 1978 to 1990 to test these four hypotheses. Their evidences are in line with the hubris and managerial discretion hypotheses and some evidences are also in line with the market-for-corporate-control hypothesis.

Taken together, it seems that the agency hypothesis is the best relevant explanation for the research questions of this study “why do acquirers manipulate their earnings prior to a merger announcement?” and “why do CEOs with different characteristics manipulate earnings management in different ways”. According to agency theory, managers make decisions on M&A to benefit themselves by providing them with more prestige and power, even if these decisions could lead to destroying the wealth of shareholders (Jensen 1986). Louis (2004) prove that earnings management of acquirers prior to M&A leads to post-merger underperformance anomaly. Gong et al. (2008) find that there is a positive association between post-merger announcement lawsuits and share-financed acquirers’ earnings management prior to a merger announcement.

CHAPTER 3: REVISITING THE EVIDENCE OF EARNINGS MANAGEMENT PRIOR TO MERGER ANNOUNCEMENTS: AN APPLICATION OF BENFORD'S LAW

Abstract

This chapter revisits the evidence suggesting share-financed acquirers engage in earnings management prior to announcing mergers and acquisitions (M&A) deals to minimize the cost of the transactions. Given that earnings management models are subjected to criticism, it is important to know whether the existing evidence indeed suggests the presence of earnings management or is it just the result of measurement errors. Applying Benford's Law to study a sample of 295 observations of public acquirers in UK from 2007 to 2012, the chapter confirms existing evidence that while cash-financed acquirers do not manage earnings prior to merger announcements, share-financed acquirers exhibit significantly high abnormal accruals and abnormal real earnings activities in the first year prior to merger announcements. This chapter makes a contribution by showing that the first digits of figures reported in the financial statements of share-financed acquirers in the year preceding the merger announcement are distributed remarkably differently from what might be expected under Benford's Law. Therefore, the evidence suggests these financial statements might have been manipulated, significantly mitigating concerns regarding possible errors in measuring abnormal earnings and strengthening the important conclusion that share-financed acquirers do indeed manage earnings before announcing an M&A deal.

Key words: Accrual-based earnings management, Real earnings management, Benford's Law, M&A.

3.1 INTRODUCTION

In a stock swap M&A deal, the acquirer uses stock to pay the target's shareholders. The acquirer and target often first negotiate and agree on the purchase price (value) of the target firm. However, the number of shares issued by the acquiring firm to pay for the target will only be determined in the future based on the acquiring firm's share price on or near the takeover agreement date. Because the acquiring firm's stock price is inversely related to the exchange ratio, if the price of the acquiring firm's share by the agreement date is higher, the acquirer will need to issue fewer shares to pay for the deal, which means the cost of the deal is cheaper from the acquirer's point of view. Therefore, if an M&A deal is financed by shares, the acquirer will have a financial motive to seek ways of boosting their share price prior to the takeover. Engaging in income-increasing earnings management could be one of the solutions.

Several studies have examined whether acquiring firms engage in income-increasing earnings management prior to a merger announcement. Louis (2004) uses an accrual model to estimate unexplained accruals, which is used as a proxy for earnings management. The author finds that acquirers tend to overstate their profits by reporting positive abnormal accruals in the period before share-financed M&A announcements. Botsari and Meeks (2008) use the Jones and modified Jones models to detect earnings management of acquirers prior to a stock swap announcement in the UK. They find that acquirers exhibit abnormally high income-increasing accruals in one year prior to the merger announcement, suggesting that they inflate earnings before the merger announcement. Higgins (2013) investigates the earnings management of acquirers prior to a stock swap announcement in the Japanese market using the Jones and modified Jones models. Consistent with the literature, the author finds that acquirers have abnormally high long-term positive accruals prior to the merger announcement.

In addition to accruals earnings management, the literature also documents that acquiring firms may structure real business transactions (real earnings management) to inflate earnings before a merger announcement. For example, Zhu and Lu (2013) have investigated whether or not share-financed acquirers manipulate real earnings activities prior to the merger announcement. Using abnormal discretionary expenditure, abnormal production costs, and abnormal cash flow as proxies for real earnings management, the authors find that share-financed acquirers try to boost their firms' market value prior to the merger announcement by engaging in real earnings management activities. Similar to Zhu and Lu (2013), Farooqi et al. (2017) investigate whether or not share-financed acquirers in the US manipulate both accruals and real earnings activities. They find that share-financed bidder firms engage in increasing income through both accrual-based and real earnings management. In general, it is relatively well established in the existing literature that share-financed acquirers inflate earnings prior to a merger announcement.

The common features of prior studies on earnings management before merger announcement is that they are based on accruals-based earnings management models and Roychowdhury's (2006) real earnings management models. Most of accrual-based models treat abnormal accruals as evidence of earnings management (Jones 1991; Dechow et al. 1995; Kothari et al. 2005). Despite the existence of a large number of competing models used to detect accrual-based earnings management, Dechow et al. (1995) and Peasnell et al. (2000) indicate that the Jones model and its modified versions (Jones 1991; Dechow et al. 1995) remain among the most efficient.

However, there are limitations to the effectiveness of these models (Dechow et al. 2012). Dechow et al. (1995) show that if the samples contain firms with extreme financial performance, the Jones and modified Jones models are often misspecified. In line with Dechow et al. (1995), McNichols (2000) shows that if the samples include firms with extreme forecasts for long-term earnings growth, testing earnings management is also misspecified if the Jones and modified Jones models are used. To reduce model misspecification, Kothari et al. (2005) construct a performance-matching procedure to reduce performance-related misspecification by matching each firm with controls having closest returns on assets. However, Dechow et al. (2012) argue that the performance-matching approach also has a limitation, such as it reduces test power because the matching procedure needs control observations. Dechow et al. (2010b) argue that abnormal accruals might be a noisy proxy for earnings management because they could contain errors and biases and there is no realistic way of completely eliminating such noise. Ball (2013) and Gerakos and Kovrijnykh (2013) also express concern that in using abnormal accruals, earnings management tends to appear everywhere and at implausibly large magnitude. Many other prominent criticisms of the use of abnormal accruals models, such as the Jones and modified Jones, can be found, for example, in Holthausen et al. (1995), Fields et al. (2001), Ball (2013) and Owens et al. (2013a).

In terms of the models used to detect potential real earnings management activities, real earnings management studies estimate abnormal levels of business activities through various expectations models. Specifically, prior studies have developed models to measure normal levels of discretionary expenditure (Berger 1993; Perry and Grinaker 1994; Gunny 2005; Roychowdhury 2006; Cohen et al. 2008), production costs (Dechow et al. 1998; Roychowdhury

2006) and cash flows from operations (Roychowdhury 2006). The residuals of these expectations models are abnormal levels of business activities. The limitation of those expectations models is similar to that of accruals detecting models, which require large volumes of data to run cross-sectional and time-series regressions. Dechow et al. (1995) argue that discretionary accrual-based models typically require hundreds of observations to gain a reasonable chance to detect subtle earnings management. Especially in M&A research, samples tend to be small. Thus, data constraints could limit the application of expectations models (Dechow et al. 1995; Dechow et al. 2011; Amiram et al. 2015).

In general, with the current state of the earnings management literature, accounting researchers have had to rely on the Jones and modified Jones models for decades in detecting accrual-based earnings management and in recent years the expectations models developed by Roychowdhury (2006) for detecting real earnings management, but all of the obtained evidence is subject to a growing concern that the key conclusions might actually have little to say about true earnings management behaviour. The evidence that acquirers inflate earnings prior to stock swap announcement, as mentioned above, is no exception.

It is already apparent that these acquirers exhibit high abnormal accruals and real earnings activities prior to a merger announcement, but whether this is evidence of earnings management or is purely the results of misspecifications of earnings management models remains an unanswered question. One direction in mitigating such concern is to use alternative proxies for earnings management to test the existing evidence. *Ex-post* measures of earnings management (e.g. publicly announced instances of earnings restatements or violations of GAAP) are good alternatives because they typically have low Type I error. However, the samples used with such *ex-post* measures, are often small, and thus it is not possible to use only *ex-post* measures of accrual-based earnings management in the context of M&A research.

This research applies recent methodology to measure an alternative empirical proxy for both accrual-based and real earnings management based on Benford's Law. This law that predicts that the first digits of figures in many datasets are distributed in a systematic way such that smaller values are more likely to occur than larger values. For example, Benford's Law predicts that the first digit of figures reported in a firm's financial statement is most likely to be 1, and least likely to be 9. The law's author (Newcomb 1881) builds an equation to determine the probability that a number (1, 2,…, 9) is on the first digit, n, is as follows:

Equation 3-1

$$\text{Probability(the first digit is n)} = \text{Log}_{10}(\text{n} + 1) - \text{Log}_{10}(\text{n})$$

where n = 1, 2, …, 9. This equation provides the theoretical distribution of the first digits 1 through 9, which is presented in Table 3-1 as follows:

Table 3-1: The first digit distributions

1	2	3	4	5	6	7	8	9
0.301	0.1761	0.1249	0.0969	0.0792	0.0669	0.058	0.0512	0.0458

Therefore, if the actual distribution of the first digits of figures in a firm's financial statements differs too greatly from the theoretical distribution depicted by Benford's Law, the financial statements might have been manipulated.

Amiram et al. (2015) propose an approach to detect earnings management by developing a score, namely the FSD_SCORE and the KSMAX, based on Benford's Law. The FSD_SCORE is designed to capture the deviation between the actual distribution of the first digits of items reported in financial statements and the expected distribution from Benford's Law. The KSMAX is designed to capture the maximum of cumulative absolute deviations between the distribution of the first digits of the reported figures in the financial statement and the theoretical distribution from Benford's Law. Amiram et al. (2015) find that earnings management correlates with the FSD_SCORE and the KSMAX by (1) running univariate analysis by separating firm-years into terciles based on Benford's Law proxies and estimating the means of accrual-based earnings management proxies for each tercile and (2) running multivariate analysis on the relation between Benford's Law proxies and accruals-based earnings management proxies.

Using Benford's Law approach to proxy for earnings management has the advantage that it does not suffer from the model misspecification issues in the Jones model, modified Jones model and the expectations models developed by Roychowdhury (2006); hence if evidence obtained from using Benford's Law approach is in line with that obtained using the Jones model, the modified Jones model and the expectations models developed by Roychowdhury (2006), it will significantly reinforce the conclusions that earnings management had indeed occurred.

The paper uses a sample of 295 M&A deals from public acquirers in the UK acquirers between 2007 and 2012, of which 62 are share-financed and 233 are cash-financed. Using the Benford's Law approach, the study finds that share-financed acquirers have a higher FSD_SCORE and KSMAX in the year prior to a merger announcement, suggesting their financial statements might have been manipulated. Using the Jones and modified Jones models and the expectations models developed by Roychowdhury (2006), it finds that share-financed acquirers engage in accrual and real earnings management in the first year prior to announcing the deal, which is in line with the extant literature. However, under either approach, there is no evidence suggesting that cash-financed acquirers inflate their earnings prior to announcing M&A deals. Therefore, the evidence suggests that the existing findings showing that share-financed acquirers exhibit high abnormal accruals are more attributable to earnings management than to abnormal accruals model misspecifications.

Based on the best knowledge available, this chapter is the first apply Benford's Law to study earnings management in the context of M&A. Evidence is presented that acquirers exhibit large deviations of first digits from Benford's Law in one year prior to a merger announcement, suggesting that acquirers manipulate earnings. The results also provide further evidence using existing accrual-based earnings management models (Jones 1991; Dechow et al. 1995) and real earnings management models (Roychowdhury 2006). In general, my evidence reassures that the practice of managing earnings prior to a share for share bid by the acquirer is firmly evidenced. This is an important contribution because of using an innovatively new model which effectively addresses the weakest point of the existing evidence. The research provides important reassurance on previously documented evidence that share-financed acquirers are associated with high abnormal accruals and high levels of real activities are indeed driven by their motivation to inflate earnings rather than a result of model misspecification.

The rest of this chapter is organized as follows. Section 3.2 presents a discussion of the literature and hypotheses. Section 3.3 describes the procedures employed to select the sample. Section 3.4 describes the main methodologies. The empirical results and robustness tests are reported in Section 3.5 and Section 3.6. Finally, Section 3.7 concludes.

3.2 LITERATURE REVIEW AND HYPOTHESES

3.2.1 Earnings management prior to the merger announcement and the inconclusive conclusions

Share-financed acquirers might want to inflate their earnings to increase their stock price prior to announcing deals; as a result, they can reduce the cost of the deals as they have to issue fewer shares to pay for the targets. Substantial evidence has been documented suggesting earnings management. Erickson and Wang (1999) investigate whether both stock- and cash-financed acquirers use earnings management to enhance their stock prices before a merger announcement. The authors use a sample of completed share- and cash-financed mergers from 1985 to 1990 and find that share-financed acquiring companies manipulate earnings upwards before the date of the acquisition agreement by examining abnormal accruals calculated using the Jones model. The evidence also shows that accounting manipulation by acquiring firms is positively related to the size of the deal.

Louis (2004) examines whether acquirers manipulate earnings to explain the well-documented abnormally poor post-merger performance. The author uses a discretionary current accruals model, the Healy (1985) model, to estimate unexplained accruals and finds that share-financed acquirers tend to overstate their earnings in the period before the acquisition announcement. He also finds that the share price of the acquirer is reversed post-merger in both the short term and the long term because of the acquirer's increasing stock price through earnings manipulation in the quarter before the announcement, but this reversal is only partial.

Following Erickson and Wang (1999) and Louis (2004), Botsari and Meeks (2008) investigate earnings management by acquirers before a merger announcement in the UK from 1997 to 2001 using a sample of 42 publicly traded firms. The evidence, using the Jones and modified Jones models shows that acquiring firms manipulate accruals to increase income in the year before the merger announcement. There is also evidence of accruals reversals in the year after acquisition. Baik et al. (2007) examine whether acquirers engage in earnings management, proxied by abnormal accruals estimated using the performance-matching model (Kothari et al. 2005), for acquisitions using different payment forms and with different listing status. They find that acquiring companies tend to use accrual earnings management to inflate income when buying private firms, especially for smaller targets or if the targets are operating in an industry other than that of the acquirers.

Extending previous research, Mahdavi-Ardekani et al. (2012) investigate the correlation between earnings management and share- and cash-financed acquiring firms' performance in Malaysia. The authors use the modified Jones model to measure discretionary accruals. They find that share-financed acquirers inflate earnings prior to a share for share bid, while cash-financed acquirers do not. They also find that earnings management on the part of share-financed acquirers preceding the merger announcement is negatively correlated with the performance of share-financed acquirers following M&A deals. Njah and Jarboui (2013) examined the effect of institutional ownership on accrual-based earnings management in France. They find that absorbing firms engage in earnings management before the offer announcement when there is the presence of institutional holding.

Also recently, Zhu and Lu (2013) have investigated real earnings management by share-financed acquirers prior to a share for share bid. Following Roychowdhury (2006), the authors employ the expectations models to measure abnormal discretionary expenditure, production costs and cash flow. They find that share-financed acquirers engage in income-increasing real earnings management activities to boost their firms' market value prior to a share for share bid. Specifically, the authors find that acquirers employ discounted price activities, which can temporarily increase sales, as well as overproduction activities, which can lower the cost of goods sold. In line with Zhu and Lu (2013), Farooqi et al. (2017) examine both accrual-based and real earnings management of share-financed acquirers in the US prior to a share for share bid. By measuring abnormal accruals derived from the modified Jones model and measuring abnormal discretionary expenditure and production costs derived from the models following Roychowdhury (2006), they find that share-financed bidder firms manipulate both accrual-based and real earnings management. The authors also find that of share-financed acquirers engage in more real earnings management than accrual-based earnings management prior to a share for share bid in the short term.

In summary, it has been shown in the literature that share-financed acquirers engage in income-increasing accrual-based and real earnings management prior to a merger announcement. In addition, it is clear that acquirers have the motivation to inflate accounting earnings to boost share prices, so that can reduce the costs of M&A deals. However, target firms are well aware of this motive and hence they will be cautious about whether the acquirer has managed earnings, often employing the extensive use of experts, such as auditors, accountants, and investment bankers. If earnings management is detected within the acquiring firm in the period prior to a share for share bid, the target firm's management and board of directors may threaten to cancel the deal, demand a higher exchange ratio, or inflate their accounting earnings and manipulate real activities to increase the target firm's stock price. As a result, the acquirer could pay even a higher price if earnings management is detected. Therefore, despite the mounting evidence that share-financed M&A deals are associated with income-increasing earnings management on the part of acquirers prior to announcing deals, as cited above, there is still strong scepticism because one could argue that acquirers will avoid inflating earnings during such a sensitive period as there is a risk of getting caught, which could be costly.

Advocates of that counter-argument could argue that the documented earnings management of share-financed acquirers could simply be the result of errors in the models used in the existing literature to detect such earnings management. To this end, existing earnings management detection models used in the M&A literature have some serious limitations. Because of the small samples used to examine stock-for-stock M&A deals[3], research into earnings management in this context generally relies on a number of models that can produce an empirical proxy for earnings management at the firm-year level without significantly further constraining the sample, such as the Healy model, the Jones model, the modified Jones model and the performance-matching model for detecting accrual-based earnings management and the expectations models developed by Roychowdhury's (2006) for detecting real earnings management. In particular, although used extensively, these accrual-based models for detecting earnings management suffer from a range of limitations and have recently received

[3] Erickson and Wang (1999) use 55 stock-for-stock deals and Botsari and Meeks (2008) use 42 stock-for-stock deals

considerable criticism (Holthausen et al. 1995; Fields et al. 2001; Dechow et al. 2010a; DeFond 2010; Ball 2013).

Dechow et al. (1995) use a test statistic across the measure of abnormal accruals generated by several models, such as the Healy, DeAngelo, Jones, modified Jones and industry models to assess their specification and power. They conclude that if the samples contain firms with extreme financial performance, these models may be misspecified in detecting earnings management. In line with Dechow et al. (1995), McNichols (2000) shows that using samples with extreme forecasts of long-term earnings growth will introduce errors in earnings management detection models. The performance-matching model was constructed to reduce performance-related misspecification (Kothari et al. 2005). However, Dechow et al. (2012) argue that the performance-matching approach, albeit a good solution, is not a panacea. They show that the performance-matching approach sometimes reduces misspecification, but on other occasions might even exaggerate the issue. For example, although model misspecification in samples with extreme book-to-market and earnings-to-price ratios is shown to be significantly reduced, the performance-matching approach exaggerates misspecification in samples with extreme operating cash flows and size values. Moreover, the performance-matching approach could increase the standard errors, leading to a weakened ability to test for earnings management.

Ball (2013) argues that using the existing abnormal accruals models, earnings management would appear to be “rife”, which is not necessarily true. In particular, researchers often rely on a regression using some firm fundamentals to predict a level of “normal” accruals, then conclude that any significant deviation from the predicted level is evidence of earnings management. The problem with that is even with a very good model (i.e. assuming we know exactly how to model accruals and the determinants), the chances are that very few observations would sit exactly on the regression line. The issue is aggravated because admittedly we have no comprehensive theory to explain the accrual-generating process, i.e. what determines accruals and how much is considered “normal” (McNichols 2000; McNichols 2002; Dechow et al. 2010a; Owens et al. 2013b).

In general, since most of the existing evidence suggesting that share-financed acquirers engage in earnings management prior to the merger announcement relies on models subject to some serious limitations, we still cannot conclude whether the high abnormal accruals and abnormal real activities observed among such acquirers are indeed evidence of earnings management or whether they are simply the result of model misspecifications. In this context, using other measures of earnings management that do not suffer from the same problems as the abnormal accruals models seems necessary.

One possible direction is to use some ex post measures of earnings management, such as published instances of earnings restatements or violations of GAAP, which typically have low Type I error (for example: when a company has actually been required to restate financial report, it is more likely to engage in earnings management). However, the number of such instances is usually small and only applies to detecting accrual-based earnings management, resulting in difficulties for use in M&A studies. Another direction would be to use a model which captures both accrual-based and real earnings management at the firm-year level without having to rely on any determinants of accrual-based or real earnings management, an area in which most of the controversy surrounding existing models lies due to the lack of a theory explaining how accruals might be generated. The next section, reviews a fairly recent model based on Benford’s Law, which meets this requirement and is used in this chapter.

3.2.2 Benford's Law

Benford's Law is a mathematical property discovered by Newcomb (1881) and rediscovered by Benford (1938). Benford's Law proposes that the digits of numbers in a dataset follow a logarithmic distribution. For example, numbers beginning with larger digits appear less frequently than those beginning with smaller ones. Therefore, numbers that are manipulated, created or unrelated usually do not follow a Benford distribution. Consequently, Benford's Law has been used as a powerful tool to investigate and identify manipulation and misstated data.

McGinty (2014) wrote an article in the *Wall Street Journal* about the results of an audit firm checking whether refunds issued by national call centre operators are true or fraudulent based on testing whether refund data conform to the Benford Law distribution. The auditors checked the first digits of each call centre operator's refunds and found that there was a divergence from Benford's Law for a small group of call centre operators. Further investigation found that thousands of dollars in fraudulent refunds were issued by these operators to themselves, family and friends.

Alali and Romero (2013) investigate a set of accounts based on financial statements of US banks in the period from 2000 to 2012. They find insignificant deviations between the distribution of the first digits of figures reported in the accounts of US banks and the theoretical distribution predicted by Benford's Law. Özer and Babacan (2013) investigate the balance sheets of Turkish banks in the period 1990-2010. They find that the distribution of the first digits in the balance sheets of these banks diverge significantly from Benford's theoretical distribution only in the year 1999. Gava and Vitiello (2014) examine the first digits of asset accounts for 14 Brazilian companies over the period 1986-2009, which contains periods of high and low inflation. They report that the asset accounts of Brazilian companies have a high probability of fraud in the high-inflation period because the first digits of these companies' asset accounts in the high-inflation period deviate more significantly from Benford's Law than in the low-inflation period.

There is a growing body of literature suggesting that Benford's Law could be used to assess earnings management. Carslaw (1988) compares the distribution of the second digits of reported income in New Zealand firms' financial statements to the distribution expected by Benford's Law. The frequencies of zero as the second digit are found to be greater than expected by Benford's Law, while the frequencies of the number 9 as the second digit are lower than expected by Benford's Law. Further investigation reveals that managers round up income to achieve earnings targets. Thomas (1989) also investigates the distribution of the second digits of earnings in the financial statements of US firms, reporting patterns similar to those observed for the New Zealand firms.

Johnson (2009) identifies firm characteristics that may have a correlation with earnings manipulation by comparing the first-digit distribution of earnings-per-share and quarterly net income data of US firms in the period 1999-2004 to the distribution expected by Benford's Law. Johnson (2009) finds that the earnings distributions of companies with low capitalization and higher levels of inside trading do not conform to the distribution expected by Benford's Law, indicating a high probability that these firms engage in earnings management. Hsieh and Lin (2013) investigate the second-digit distribution of the quarterly net income figures of US companies in the marine industry. They find that the frequency of zero as the second digit is significantly higher than the frequency expected by the

Benford Law distribution. They conclude that firms in the marine industry manage earnings to achieve key reference points by rounding up earnings numbers.

The above research focuses on earnings numbers of firms in a period rather than using firm-year data. Recent research (e.g. Amiram et al. (2015) relies on the properties of numbers following Benford's Law as a proxy for earnings management. Compared with other existing measures of earnings management, the use of Benford's Law has some significant advantages (Amiram et al. 2015). First, it does not require cross-sectional or time-series data and needs only firm-year data for the calculation. Second, it is not statistically biased because it does not need estimation based on any particular model. Finally, there are no effects of firm characteristics or firm performance. However, Benford's Law also has some limitations. First, it can effectively identify areas with high risk of earnings management, but not indicating earnings management instances itself. Second, Benford's law can only predict the distribution of many dataset in which figures are generated naturally, such as household electricity bills, earnings, sales, expenses, amount of tax payments of companies etc. It cannot predict dataset where numbers are sequential such as invoice numbers or if the numbers are generated with some intention.

To the best of my knowledge, there has been no published study that empirically investigates earnings management prior to a share for share bid employing deviations from Benford's Law as an earnings management proxy. Based on the advantages and limitations of Benford's Law, this chapter applies deviations from Benford's Law as an alternative approach for detecting earnings management prior to the merger announcement.

3.2.3 Hypotheses

As explained earlier, the existing literature generally suggests that share-financed acquirers have the incentive to manipulate earnings to increase their stock price prior to a merger announcement. As a result, acquiring firms may reduce the cost of purchasing the target firm (Louis 2004; Baik et al. 2007; Botsari and Meeks 2008; Gong et al. 2008; Zhu and Lu 2013; Farooqi et al. 2017). In contrast, cash-financed acquirers generally do not have the motivation to inflate earnings (Erickson and Wang 1999; Mahdavi-Ardekani et al. 2012). Therefore, the hypotheses are stated as follows:

H3.1: The first digits[4] of figures reported in the financial statements of share-financed acquirers prior to a merger announcement conform less closely to the distribution expected under Benford's Law than those of the rest of the sample do.

H3.2: The first digits of figures reported in the financial statements of cash-financed acquirers prior to a merger announcement do not conform less closely to the distribution expected under Benford's Law than those of the rest of the sample.

H3.3: Share-financed acquirers engage in income-increasing accrual-based earnings management prior to a merger announcement.

H3.4: Cash-financed acquirers do not engage in income-increasing accrual-based earnings management prior to a merger announcement.

[4] Following Amiram et al. (2015), this study investigates the first digit of figures reported in the financial statements

H3.5: Share-financed acquirers engage in income-increasing real earnings management prior to a merger announcement.

H3.6: Cash-financed acquirers do not engage in income-increasing real earnings management prior to a merger announcement.

H3.7: The first digits of figures reported in the financial statements of share-financed acquirers prior to a merger announcement conform less closely to the distribution expected under Benford's Law than those of cash-financed acquirers do.

H3.8: Share-financed acquirers engage in income-increasing accrual-based and real earnings management prior to a merger announcement to a greater extent than cash-financed acquirers.

3.3 SAMPLE SELECTION

This study used a sample of UK companies (dead and alive) from 2007 to 2012. Financial data are downloaded from Datastream. Utility and financial firms are then removed because the motivations of these companies to manage earnings are impacted by special regulations (Burgstahler and Eames 2006). Observations with fiscal years longer than 400 or shorter than 330 days and those not using the Sterling pound (£) as the reporting currency are also removed. In addition, observations with more than one type of equity are deleted. To estimate earnings management proxies, all observations within Datastream's level-six industry-year will be eliminated if total observations of that industry-year are less than six. Finally, only observations with sufficient data to perform all of the main tests in this chapter are retained. The above process yields a final sample of 7,727 observations (1,855 unique firms across 70 Datastream level-six industries). In order to mitigate the influence of outliers, all continuous variables are winsorised at the 1st and 99th percentiles.

For the test employing measures of earnings management based on Benford's Law, the study follows Amiram et al. (2015) to exclude a firm-year observation if the firm's cash flow statements, income statements and balance sheets report fewer than 50 items, which could be due to the company being new or to missing data, to avoid measurement error. The first digits of all items in cash flow statements, income statements and balance sheets are then extracted. This results in 4,610 firm-year observations over the period 2007–2012 (1,129 unique firms) with 230,200 first digits. This sample was used to calculate the FSD_SCORE and KSMAX for share-financed acquiring firms, cash-financed acquiring firms and for the entire market to determine if the financial statement data of share-financed acquiring firms, cash-financed acquiring firms and the entire market conform to Benford's Law.

The M&A sample contains all mergers reported in the Bloomberg database. Data were collected for all M&A deals in the UK over the period of 2007 to 2012. In total, there were 1,707 deals with 937 acquirers. The study only included deals made by public UK acquirers. From this full sample, a data subset was selected containing share-financed transactions, which are deals having share payments are higher 50% and cash-financed transactions, which are deals having cash payments are higher 50%. The sample of share-financed and cash-financed mergers was matched with financial data obtained as described above, using the international securities identification number (ISIN). Deals without sufficient data to calculate empirical variables for the three years before the merger announcement were eliminated. The final sample consists of 295 deals out of 7,727 observations. The 295 deals include 62 share-financed deals and 233 cash-financed deals, while the rest of the same includes 7,432 non-deal observations. Table 3-2 shows distributions of UK M&A deals from 2007 to 2012.

Table 3-2: Distributions of UK M&A deals in the period 2007-2012

Panel A: Distribution across years							
Year	Full Sample	Share-financed deals		Cash-financed deals		Rest of sample	
		Number	Percentage	Number	Percentage	Number	Percentage
2007	1,351	13	21.0	64	27.5	1,274	17.1
2008	1,363	12	19.4	38	16.3	1,313	17.7
2009	1,322	11	17.7	28	12.0	1,283	17.3
2010	1,294	15	24.2	33	14.2	1,246	16.8
2011	1,233	7	11.3	34	14.6	1,192	16.0
2012	1,164	4	6.5	36	15.5	1,124	15.1
Total	7,727	62	100.0	233	100	7,432	100

Panel B: Distribution across industries					
DataStream Level 6 code	Description	Full sample	Share-financed deals	Cash-financed deals	Rest of sample
30	Building Materials and Fixtures	132	0	0	132
32	Industrial Suppliers	140	1	18	121
33	Specialty Chemicals	146	0	2	144
34	Computer Hardware	80	0	1	79
35	Farm Fish Plantation	63	0	1	62
36	Home Construction	68	1	1	66
37	Electrical Equipment	160	0	3	157
39	Heavy Construction	105	0	4	101
41	Media Agencies	175	7	12	156
43	Industrial Machinery	281	1	14	266
44	Defence	50	0	7	43
45	Healthcare Providers	73	0	1	72
46	Financial Administration	40	0	1	39

Table 3-2: Distributions of UK M&A deals in the period 2007-2012

47	Waste- Disposal Services	7	0	0	7
48	Personal Products	28	0	1	27
49	Coal	52	0	0	52
50	Exploration and Production	353	6	4	343
51	Oil Equipment and Services	85	0	5	80
54	Nonferrous Metals	38	1	0	37
55	Recreational Services	92	0	1	91
56	Iron and Steel	35	1	1	33
57	Electronic Equipment	127	0	3	124
58	Software	518	5	15	498
59	Durable Household Products	37	0	0	37
60	Furnishings	51	0	0	51
61	Toys	19	0	0	19
62	Nondurable and Household Products	4	0	0	4
63	Auto Parts	58	0	0	58
64	Transport Services	104	0	0	104
66	Apparel Retailers	92	0	2	90
69	Clothing and Accessory	86	1	0	85
70	Containers and Package	62	0	1	61
71	Food Products	127	0	4	123
72	Restaurants and Bars	143	2	3	138
74	Renewable Energy Equipment	35	0	0	35
78	Platinum and Precious Metals	53	1	2	50
80	Hotels	35	0	0	35
82	Paper	15	0	0	15
83	Alternative Fuels	44	1	1	42
84	Publishing	147	1	8	138

Table 3-2: Distributions of UK M&A deals in the period 2007-2012

85	Home Improvement Retailers	46	0	0	46
86	Business Support Services	588	4	41	543
87	Broadline Retailers	56	0	1	55
88	Food Retail-Wholesale	58	1	1	56
89	Diamonds and Gemstones	46	2	1	43
90	Specialty Retailers	159	1	8	150
94	Travel and Tourism	57	0	3	54
95	Pharmaceuticals	231	4	12	215
97	Integrated Oil and Gas	36	0	2	34
98	Aerospace	49	0	3	46
100	Gambling	86	1	1	84
101	Diversified Industrials	47	0	1	46
103	Medical Supplies	65	0	1	64
112	Real Estate Holding and Development	126	3	0	123
115	Broadcast and Entertainment	187	0	2	185
117	Commercial Vehicles and Trucks	36	0	0	36
119	Gold Mining	199	2	2	195
122	General Mining	271	4	10	257
126	Telecommunications Equipment	159	3	5	151
129	Airlines	31	0	1	30
130	Semiconductors	200	0	2	198
132	Medical Equipment	108	1	1	106
134	Bus Train and Employment	163	0	2	161
142	Fixed Line Telecommunication	83	0	0	83
143	Mobile Telecommunication	64	1	2	61
150	Computer Services	231	3	5	223

Table 3-2: Distributions of UK M&A deals in the period 2007-2012

151	Internet	78	0	5	73
156	Specialized Consumer Service	44	0	1	43
157	Biotechnology	235	3	4	228
167	Real Estate Services	28	0	0	28
	Total	7,727	62	233	7,432

3.4 METHODOLOGY

3.4.1 Deviations of the first digits using Benford's Law

Amiram et al. (2015) capture the first digits of numbers in the financial statements of a firm-year from the distribution following Benford's Law. They calculate the mean of absolute deviations (FSD_SCORE) and the maximum of cumulative absolute deviations (KSMAX) between actual distributions and expected distributions following Benford's Law.

3.4.1.1 FSD_SCORE calculation

FSD_SCORE calculation is the sum of the absolute difference between the empirical frequency of each first digit from 1 to 9 of numbers in financial statements and the theoretical frequency expected by Benford's Law, divided by nine. Following Amiram et al. (2015), the study calculates the FSD_SCORE as follows:

Equation 3-2

$$FSD\_SCORE_{i,t} = \frac{\sum_{d=1}^{9}\left(AP_{d,i,t} - EP_{d}\right)}{9}$$

where $\mathrm{FSD\_SCORE}_{\mathrm{d,i,t}}$, is defined as the mean absolute deviation of the first digits of figures reported in financial statements from the distribution expected by Benford's Law of firm *i* in year *t*; $\mathrm{AP}_{\mathrm{d,i,t}}$ is defined as the actual probability of the first digit *d* of firm *i* in year *t*; EP_{d} is defined as the expected probability of the first digit *d* as defined by Benford's Law; *d* = 1, 2, …, 9.

3.4.1.2 KSMAX calculation

KSMAX is the maximum of the difference between the cumulative actual distribution, which is the empirical frequency of each first digit from 1 to 9 of the numbers in financial statements, and the cumulative expected distribution, which is the theoretical frequency expected by Benford's Law. Following Amiram et al. (2015), the study calculated KSMAX as follows:

Equation 3-3

$$KSMAX_{i,t} = MAX(\left|AP_{1,i,t} - EP_{1,i,t}\right|, \left|\left(AP_{1,i,t} + AP_{2,i,t}\right) - \left(EP_{1,i,t} + EP_{2,it,t}\right)\right|, \dots, |(AP_{1,it,t} + AP_{2,i,t} \dots + AP_{9,i,t}) - (EP_{1,i,t} + EP_{2,i,t} + \cdots + EP_{9,i,t})|)$$

where $\mathrm{KSMAX}_{i,t}$, is defined as the maximum of the difference between the cumulative actual probability, which is the cumulative empirical frequency of each first digit in financial statements and the expected probability, i.e. the theoretical frequency expected by Benford's Law for firm *i* in year *t*; $\mathrm{AP}_{1,i,t}$, $\mathrm{AP}_{2,i,t}$,…, $\mathrm{AP}_{9,i,t}$ is defined as the actual probability of the numbers 1,2,…,9 of the first digit for firm *i* in year *t*; $\mathrm{EP}_{1,i,t}$, $\mathrm{EP}_{2,i,t}$,…, $\mathrm{EP}_{9,i,t}$ is defined as the expected probability of the numbers 1, 2,…, 9 for the first digit as defined by Benford's Law.

$\mathrm{FSD\_SCORE}_{i,t}$ and $\mathrm{KSMAX}_{i,t}$ are equal to zero when financial statements are free of errors because the empirical probability of the first digit of firms' financial statement numbers follows Benford's Law (Amiram et al. 2015). If $\mathrm{FSD\_SCORE}_{i,t}$ or $\mathrm{KSMAX}_{i,t}$ are higher than zero, this suggests there are errors on the financial statement.

3.4.2 Accrual-based earnings management

In addition to Benford's Law, I also used traditional measures of earnings management. The accrual-based measures have been employed by numerous studies (Botsari 2014; Botsari and Meeks 2008; Chen et al. 2011b; Dechow et al. 1995; Healy 1985; Shivakumar 2000). A common feature of those models is to estimate abnormal accruals, which are used as a proxy for management discretion over financial reporting, or earnings management.

To evaluate accruals manipulation, many standard models have been used by researchers: the Healy (1985) model, the Jones (1991) model, the modified Jones model (Dechow et al. 1995), the DeAngelo (1986) model, the industry model (Dechow and Sloan 1991), the Kang and Sivaramakrishnan (1995) model and the performance-matched discretionary accruals model (Kothari et al. 2005). Following Botsari and Meeks (2008), this study employs the most popular cross-sectional standard Jones model and the cross-sectional modified Jones model to estimate abnormal accruals. In the first stage, the following regression is run in each industry-year with at least six observations:

Equation 3-4

$$\frac{TA_{i,t}}{A_{i,t-1}} = \alpha + \beta_1 \frac{\Delta REV_{i,t}}{A_{i,t-1}} + \beta_2 \frac{PPE_{i,t}}{A_{i,t-1}} + \varepsilon_{i,t}$$

In the second stage, the estimated coefficients from Equation 3-4 represented as a, b_1, b_2 are used to calculate abnormal accruals for all firms:

Equation 3-5

$$AA_{i,t} = \frac{TA_{i,t}}{A_{i,t-1}} - [a + b_1 \frac{\Delta REV_{i,t}}{A_{i,t-1}} + b_2 \frac{PPE_{i,t}}{A_{i,t-1}}]$$

where $\mathrm{AA}_{i,t}$ is abnormal accruals of firm *i* in year *t*. a, b_1 and b_2 are the calculated coefficients from Equation 3-4.

Dechow et al. (1995) show that *"the Jones model eliminates part of the managed earnings from the proxy of discretionary accruals when earnings are managed through discretionary revenue"*. To solve this problem, they suggest that the modified Jones model should eliminate changes in receivables (∆REC) from changes in sales in the second stage. Therefore, the modified Jones model estimated abnormal accruals as follows:

Equation 3-6

$$AA_{i,t} = \frac{TA_{i,t}}{A_{i,t-1}} - [a + b_1(\frac{\Delta REV_{i,t}}{A_{i,t-1}} - \frac{\Delta REC_{i,t}}{A_{i,t-1}}) + b_2\frac{PPE_{i,t}}{A_{i,t-1}}]$$

3.4.3 Real earnings management

Real earnings activities are performed by various means, including: reduce costs by decreasing R&D expenses, advertising expenses, sale and administrative expenses; reducing the cost per unit sold by rising the numbers of products made; increase earnings through sales by reducing the product prices (Roychowdhury 2006). There are several models developed by Roychowdhury (2006) to measure real earnings management activities. This thesis examines these real earnings management proxies for detecting real earnings management.

3.4.3.1 Sale-based manipulation

As documented in the previous literature, companies could engage in manipulating sales by providing a greater price discounts to inflate companies' earnings. Sales manipulations may lead to abnormally low cash flows. The Roychowdhury (2006)'s model for estimating normal cash flows from operations is as follows:

Equation 3-7

$$\frac{CF_{i,t}}{A_{i,t-1}} = \alpha_0 + \beta_1 \frac{1}{A_{i,t-1}} + \beta_2 \frac{REV_{i,,t}}{A_{i,t-1}} + \beta_3 \frac{\Delta REV_{i,t}}{A_{i,t-1}} + \varepsilon_{i,t}$$

For every firm-year, abnormal cash flows from operation (ACF) is computed as deviation from the normal level of cash flows, multiplied by -1.

3.4.3.2 Discretionary expense-based manipulation

Expenses manipulation is related to unexpected reductions in R&D, advertising and selling, general and administrative expenses, etc., for increasing reported earnings. Roychowdhury (2006)'s model for estimating normal discretionary expenses is as follows:

Equation 3-8

$$\frac{DISEXP_{i,t}}{A_{i,t-1}} = \alpha_0 + \beta_1 \frac{1}{A_{i,t-1}} + \beta_2 \frac{REV_{i,t-1}}{A_{i,t-1}} + \varepsilon_{i,t}$$

where $\mathrm{DISEXP}_{i,t}$ is the sum of R&D, selling, general and administrative (SG&A) and advertising expenses of firm *i* in year *t*. For every firm-year, abnormal discretionary expenses (ADEXP) is computed as deviation from the normal level of discretionary expenses, multiplied by -1.

3.4.3.3 Production cost-based manipulation

Production cost manipulation is employed for inflating current earnings. Companies could manipulate production activities to rise product units produced and thus decrease the cost per unit sold, consequently manipulate earnings. Production costs is the sum of the cost of goods sold (COGS) and the change in inventory (∆INV) (Roychowdhury 2006). The equation used to calculate normal production costs are as follows:

Equation 3-9

$$\frac{PROD_{i,t}}{A_{i,t-1}} = \alpha_0 + \beta_1 \frac{1}{A_{i,t-1}} + \beta_2 \frac{REV_{i,t}}{A_{i,t-1}} + \beta_3 \frac{\Delta REV_{i,t}}{A_{i,t-1}} + \beta_4 \frac{\Delta REV_{i,t-1}}{A_{i,t-1}} + \varepsilon_{i,t}$$

where $\mathrm{PROD}_{i,t}$ is production costs of firm i in year *t*; $\Delta\mathrm{REV}_{i,t-1}$ = $REV_{i,t-1}$ - $\mathrm{REV}_{i,t-2}$. For every firm-year, abnormal production costs (APROD) is computed as deviation from the normal level of production costs.

3.4.3.4 Total real earnings managment

It is possible that acquirers may use any of three types of real earnings activities. Therefore, I construct a variable for total real earnings management. The abnormal total real earnings management (ATREM) is equal to abnormal cash flows plus abnormal production costs plus abnormal discretionary expenditures.

3.4.4 Indicator of the year when M&A deals are announced

M&A announcements in the financial press normally relate to three M&A steps. The first M&A step is negotiating the terms of the deal called the announcement date. The second M&A step is reaching an agreement called the agreement date. Finally, the third M&A step is the completing the payment method chosen to perform the takeover called the completion date.

Previous papers have found that acquirers inflate their earnings prior to a merger announcement which is the first M&A step (the agreement date). To reinvestigate the earnings management of acquirers prior to the merger announcement, there is a need to identify the announcement of the agreement date relative to reporting periods accurately. Therefore, year *t* is defined as the announcement year which is the first year with acquirer's earnings release after the agreement date. Year *t*-1 is defined as the first year with acquirer's earnings release before the agreement date. Year *t*-2 is defined as the second year with acquirer's earnings release before the agreement date. Finally, year *t*-3 is defined as the third year with acquirer's earnings release before the agreement date. These years are described in Figure 3-1.

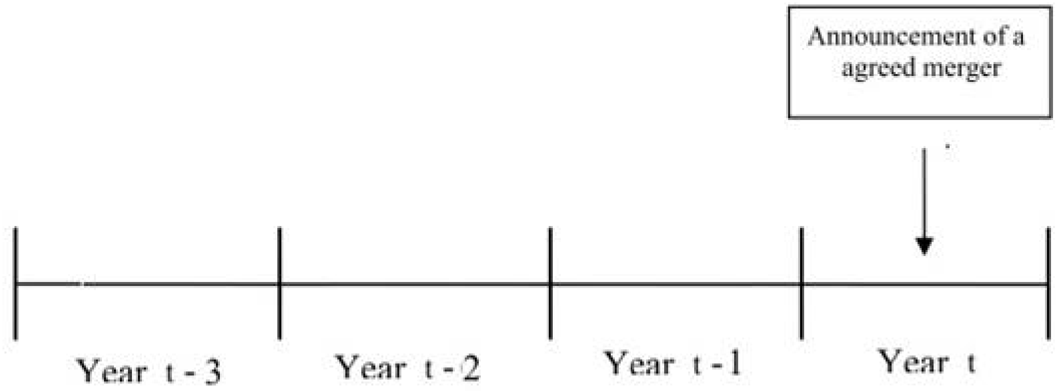

Figure 3-1: The years prior to M&A deal announcement

3.4.5 Control variables

3.4.5.1 Size

Firm size is an important control variable in investigating accruals earnings management. Dechow and Dichev (2002) find that firm size is negatively related to earnings management. Consistent with Dechow and Dichev (2002), Cao and Lee (2002) and Van Tendeloo and Vanstraelen (2005) also find a negative relationships between firm size and earnings management. The reason is that large firms are required to release their financial reports annually to the public. Thus, compared to small firms, large firms are less likely to manage earnings. Firm size is defined as the natural log of the market value of equity at the end of the fiscal year. The coefficient of SIZE is expected to be negative.

3.4.5.2 Growth opportunities

The ratio of market value of equity to book value of equity (MTB ratio), which is used for growth opportunities, is also likely to be correlated with a firm engaging in earnings management. Skinner and Sloan (2002) argue that low MTB ratio firms have stronger incentives to manage earnings because they are more sensitive to earnings fluctuations. Therefore, the study uses these variables to control for systematic variation in estimating accrual-based earnings management. MTB is equal to the market value of equity at the end of fiscal year divided by the book value of equity at the end of the fiscal year. The coefficient of MTB is expected to be positive.

3.4.5.3 Leverage

Leverage is the next control variable, which is widely used to control the impact of debt contracting on earnings management. The reason is that debts usually come with restrictions, which are often tied to the firm's performance. Therefore, earnings might be increased by managers if firms have a significant amount of leverage (Houmes and Skantz 2010). However, Alsharairi (2012) provides other evidence of a correlation between leverage and earnings management by examining the impact of high leverage on earnings management using a sample of non-cash M&A deals. They find that the correlation between leverage and earnings management is significantly negative. LEV is defined as the total long-term and short-term debts at the end of year *t* divided by total assets at the end of year *t*. Thus, there are no expectations concernings the sign of the coefficient of LEV.

3.4.5.4 Return on assets

Dechow et al. (1995) provide evidence that firms with strong performance are more likely to manage earnings by using accruals. In line with Dechow et al. (1995), Kasznik (1999) finds that firm performance tends to have a positive relationship with discretionary accruals. Hence, this study controls for acquirer's firm performance, proxied by return on assets (ROA). ROA is defined as earnings before interest and tax divided by lagged total assets. The coefficient of ROA is expected to be positive.

3.4.5.5 Net operating assets

Net operating assets (NOA) is the next control variable. Barton and Simko (2002) argue that higher current NOA indicates greater past earnings manipulations because the balance sheet accumulates the effects of prior accounting choices. Therefore, Barton and Simko (2002) predict that the firms' level of NOA is negatively related to managers' ability to use accruals to affect reported earnings. Consistent with their predictions, they find that the level of NOA is negatively related to the probability of meeting or beating analysts' earnings expectations. Therefore, NOA is also used here to control for systematic variation in estimating accrual-based earnings management. NOA is defined as the total of the book value of equity, long-term and short-term debt, cash and equivalents, all divided by sales. The coefficient of NOA is expected to be negative.

3.4.5.6 Equity issuance

Existing studies suggest that firms are more likely to increase earnings reported in financial statements prior to a seasoned equity offering (SEO) (Teoh et al. 1998b; Shivakumar 2000). Furthermore, Cohen and Zarowin (2010) examine both accruals earnings management and real activity manipulations around SEO and find that managers do indeed use both methods to manage earnings upwards before SEOs. Following Zang (2012), the study employs SEO as a dummy control variable, which takes a value of 1 if the firm issues common equity in the fiscal year and zero otherwise. The firm that issues common equity is called the equity issuer in a year if: (1) its proceeds from sale/issue of stocks are positive, and (2) the firm's outstanding common shares increase by at least 5% on the previous year[5]. The coefficients of SEO are expected to be positive.

3.4.6 Empirical models

To test H3.1, H3.2, H3.3 and H3.4, the following regression is estimated:

Equation 3-10

$$\begin{aligned} Y_{i,t-1-k} = {} & \alpha + \beta_1\left(SMA_{i,t}\right) + \beta_2\left(CMA_{i,t}\right) + \beta_3(MTB_{i,t-2-k}) + \beta_4(SIZE_{i,t-2-k}) \\ & + \beta_5(ROA_{i,t-1-k}) + \beta_6(LEV_{i,t-2-k}) + \beta_7(NOA_{i,t-2-k}) \\ & + \beta_8(SEO_{i,t-1-k}) + Year\ Fixed\ Effects + Industry\ Fixed\ Effects \\ & + \varepsilon_{i,t-1-k} \end{aligned}$$

$\mathrm{Y_{i,t-1-k}}$ is replaced by $\mathrm{FSD\_SCORE_{i,t-1-k}}$ and $\mathrm{KSMAX_{i,t-1-k}}$, abnormal total accruals estimated by the Jones and modified Jones models ($\mathrm{ATA\_JM_{i,t-1-k}}$ and $\mathrm{ATA\_MJM_{i,t-1-k}}$) and abnormal working capital estimated by the Jones and modified Jones models ($\mathrm{AWCA\_JM_{i,t-1-k}}$ and $\mathrm{AWCA\_MJM_{i,t-1-k}}$),. *k* will be replaced by 0, 1 and 2 to investigate the Benford's Law and the accruals of share- and cash-financed acquirers in year *t*-1, year *t*-2 and year *t*-3. $\mathrm{SMA_{i,t}}$ and $\mathrm{CMA_{i,t}}$ are dummy variables which are set to 1 for share-financed acquiring firms and 1 for cash-financed acquiring firms in year *t* and zero otherwise. $\mathrm{MTB_{i,t-2-k}}$, $\mathrm{SIZE_{i,t-2-k}}$, $\mathrm{ROA_{i,t-1-k}}$, $\mathrm{LEV_{i,t-2-k}}$, $\mathrm{NOA_{i,t-2-k}}$ and $\mathrm{SEO_{i,t-1-k}}$ are control variables to control for the effects of growth opportunities, firm size, firms' performance, debt, equity issuance and the level of net operating assets.

[5] The 5% benchmark is a significant share issuance, which is large enough to motivate managers to implement earnings management.

To test H3.5 and H3.6, linear regressions are also run, investigating whether share- and cash-financed acquirers manipulate real earnings management prior to a merger announcement. Specifically, the following regression is estimated:

Equation 3-11

$$Y_{i,t-1-k} = \alpha + \beta_1(SMA_{i,t}) + \beta_2(CMA_{i,t}) + \beta_3(MTB_{i,t-2-k}) + \beta_4(SIZE_{i,t-2-k})$$
$$+ \beta_5(ROA_{i,t-1-k}) + \beta_6(LEV_{i,t-2-k}) + \beta_7(SEO_{i,t-1-k})$$
$$+ Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t-1-k}$$

$\mathrm{Y}_{\mathrm{i,t-1-k}}$ is replaced with $\mathrm{ACF}_{\mathrm{i,t-1-k}}$, $\mathrm{ADEXP}_{\mathrm{i,t-1-k}}$, $\mathrm{APROD}_{\mathrm{i,t-1-k}}$ and $\mathrm{ATREM}_{\mathrm{i,t-1-k}}$. *k* will be replaced by 0, 1 and 2 for investigating the effect of board connections on real earnings management in year *t*-1, year *t*-2 and year *t*-3. Other variables are as explained in Equation 3-10. This regression excludes the $\mathrm{NOA}_{\mathrm{i,t-1-k}}$ because previous research has not shown a correlation between real earnings management and net operating assets (Barton and Simko 2002).

To test H3.7 and H3.8, linear regressions are also run to examine Benford's Law and accrual-based earnings management. Specifically, the following regression is estimated:

Equation 3-12

$$Y_{i,t-1-k} = \alpha + \beta_1(SMA\_CMA_{i,t}) + \beta_2(MTB_{i,t-2-k}) + \beta_3(SIZE_{i,t-2-k})$$
$$+ \beta_4(ROA_{i,t-1-k}) + \beta_5(LEV_{i,t-2-k}) + \beta_6(NOA_{i,t-2-k})$$
$$+ \beta_7(SEO_{i,t-1-k}) + Year\ Fixed\ Effects + Industry\ Fixed\ Effects$$
$$+ \varepsilon_{i,t-1-k}$$

$\mathrm{Y}_{\mathrm{i,t-1-k}}$ is replaced with $\mathrm{FSD\_SCORE}_{\mathrm{i,t-1-k}}$, $\mathrm{KSMAX}_{\mathrm{i,t-1-k}}$, $\mathrm{ATA\_JM}_{\mathrm{i,t-1-k}}$, $\mathrm{ATA\_MJM}_{\mathrm{i,t-1-k}}$, $\mathrm{AWCA\_JM}_{\mathrm{i,t-1-k}}$ and $\mathrm{AWCA\_MJM}_{\mathrm{i,t-1-k}}$,. *k* will be replaced by 0, 1 and 2 for investigating Benford's Law and accrual-based earnings management of acquirers in year *t*-1, year *t*-2 and year *t*-3. $\mathrm{SMA\_CMA}_{\mathrm{i,t}}$ are indicator variables which are set to 1 for share-financed acquiring firms and zero for cash-financed acquiring firms in year *t*.

To test H3.8, linear regressions are also run to examine real earnings management. Specifically, the following regression is estimated:

Equation 3-13

$$
\begin{aligned}
Y_{i,t-1-k} = \alpha &+ \beta_1(SMA\_CMA_{i,t}) + \beta_2(MTB_{i,t-2-k}) + \beta_3(SIZE_{i,t-2-k}) \\
&+ \beta_4(ROA_{i,t-1-k}) + \beta_5(LEV_{i,t-2-k}) + \beta_6(SEO_{i,t-1-k}) \\
&+ Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t-1-k}
\end{aligned}
$$

$\mathrm{Y}_{\mathrm{i,t-1-k}}$ is replaced with $\mathrm{ACF}_{\mathrm{i,t-1-k}}$, $\mathrm{ADEXP}_{\mathrm{i,t-1-k}}$, $\mathrm{APROD}_{\mathrm{i,t-1-k}}$ and $\mathrm{ATREM}_{\mathrm{i,t-1-k}}$. *k* will be replaced by 0, 1 and 2 for investigating the real earnings management of acquirers in year *t*-1, year *t*-2 and year *t*-3.

3.5 RESULTS

3.5.1 Descriptive statistics

Table 3-3 provides an overview of the statistics for earnings management proxies (Panel A), firm' characteristics (Panel B) and control variables (Panel C). The mean of FSD_SCORE is 0.038, with a standard deviation of 0.012. These statistics are consistent with the mean (0.0296) and standard deviation (0.0087) of US listed firms by Amiram et al. (2015). The mean (0.095) and the standard deviation (0.043) of KSMAX are higher than the mean and the standard deviation of FSD_CORE. The reason is that the KSMAX is the maximum of the difference of in the cumulative actual distribution of each first digit from 1 to 9 of numbers in financial statements and cumulative expected distribution based on Benford' Law, while FSD_SCORE is the defined as the mean absolute deviation of these distributions from Benford's Law. The results also show that, on average, the means of abnormal total accruals and abnormal working capital accruals estimated using the Jones and modified Jones models are negative for all proxies. However, the number of observations of accrual-based and real earnings management are higher than FSD_SCORE and KSMAX because these are calculated based on the first digits of more than 50 items reported in financial statements. Finally, firm statistics (Panel C) and control variables (Panel D) are similar to those reported in prior research (Goh and Gupta 2016; Nguyen et al. 2016; Nguyen et al. 2015).

Table 3-3: Descriptive statistics

Statistics	N	MEAN	STD	MIN	P25	MEDIAN	P75	MAX
Panel A: Earnings management proxies								
$FSD\_SCORE_{i,t-1}$	4,610	0.038	0.012	0.016	0.030	0.036	0.045	0.074
$KSMAX_{i,t-1}$	4,610	0.095	0.043	0.012	0.064	0.086	0.117	0.358
$ATA\_JM_{i,t-1}$	7,727	-0.010	0.135	-0.553	-0.059	-0.004	0.049	0.428
$AWCA\_JM_{i,t-1}$	7,727	-0.010	0.134	-0.529	-0.058	-0.005	0.050	0.430
$ATA\_MJM_{i,t-1}$	7,727	-0.017	0.149	-0.595	-0.074	-0.010	0.051	0.441
$AWCA\_MJM_{i,t-1}$	7,727	-0.017	0.147	-0.589	-0.074	-0.010	0.051	0.425
$ACF_{i,t-1}$	7,727	-0.008	0.282	-1.115	-0.100	-0.014	0.057	1.292
$APROD_{i,t-1}$	7,727	-0.010	0.255	-1.091	-0.105	-0.003	0.098	0.870
$ADEXP_{i,t-1}$	7,727	-0.020	0.434	-2.349	-0.112	0.018	0.145	1.470
$ATREM_{i,t-1}$	7,727	-0.029	0.455	-2.207	-0.158	-0.003	0.136	1.754
Panel B: Firm characteristics								
$AT_{i,t-1}$	7,727	5,208,723	18,120,147	776	19,261	107,551	1,209,600	128,234,000
$IB_{i,t-1}$	7,727	349,050	1,440,068	-511,336	-1,190	2,252	46,957	10,866,000
$MACAP_{i,t-1}$	7,727	6,176,035	23,201,720	776	15,425	93,203	1,062,694	172,790,923
$SALE_{i,t-1}$	7,727	4,151,836	14,718,687	0	10,145	85,638	1,001,900	109,132,000
Panel C: Control variables								
$SEO_{i,t-1}$	7,727	0.273	0.445	0	0	0	1	1
$SIZE_{i,t-1}$	7,727	11.869	2.889	6.654	9.644	11.443	13.876	18.968
$MTB_{i,t-1}$	7,727	2.645	4.301	-11.854	0.936	1.742	3.154	27.638
$LEV_{i,t-1}$	7,727	0.176	0.194	0	0.005	0.130	0.272	0.996
$NOA_{i,t-1}$	7,727	0.494	0.260	-0.403	0.349	0.539	0.686	0.932
$ROA_{i,t-1}$	7,727	-0.056	0.334	-2.143	-0.054	0.036	0.080	0.323

Note: The table reports descriptive statistics of selected variables. Definitions of variables are in the appendix.

3.5.2 Univariate analyses

Botsari and Meeks (2008) apply t-tests for the discretionary accruals proxies, which are computed from the cross-sectional Jones model and modified Jones model. The purpose of these tests is to determine whether the abnormal accruals of share-financed acquirers are positive and statistically significant in the event year. Following Botsari and Meeks (2008), this study estimates abnormal accruals using the Jones and modified Jones models and abnormal real earnings management using the expectations models developed by Roychowdhury (2006) and Benford's Law proxies, as discussed in section 3.4. All companies in the same DataStream level 6 code are taken as the sample to estimate all models for each event year (*t*-1, *t*-2 and *t*-3). Companies not experience an acquisition are excluded from the sample.

Table 3-4 presents the results of these cross-sectional t-tests. For share-financed acquirers in year *t*-1, the means of $\mathrm{FSD_SCORE}_{i,t-1}$and $\mathrm{KSMAX}_{i,t-1}$ are significantly positive at the 1% level (0.045 and 0.115 respectively). Also, the mean of abnormal total accruals ($\mathrm{ATA\_JM}_{i,t-1}$) and abnormal working capital accruals ($\mathrm{AWCA\_JM}_{i,t-1}$) derived from the Jones model are positive and significantly at the 10% level (0.026 and 0.021 respectively). The mean of abnormal total accruals ($\mathrm{ATA\_MJM}_{i,t-1}$) derived from the modified Jones model is positive (0.020) and statistically significant at the 10% level, whereas the mean of abnormal working capital accruals ($\mathrm{AWCA\_JM}_{i,t-1}$) derived from the modified Jones model is positive (0.014), but not significant. For real earnings management proxies in year *t*-1, the means of abnormal cash flow ($\mathrm{ACF}_{i,t-1}$) and abnormal total real earnings management ($\mathrm{ATREM}_{i,t-1}$) are positive and significant at the 10% level (0.065) and 5% level (0.119) respectively, while abnormal expenses ($\mathrm{ADEXP}_{i,t-1}$) and abnormal production costs ($\mathrm{APROD_{i,t-1}}$) are positive (0.017 and 0.027 respectively), but insignificant.

However, in years *t*-2 and *t*-3, the means of $\mathrm{ATA\_JM_{i,t-1-k}}$, $\mathrm{AWCA\_JM_{i,t-1-k}}$, $\mathrm{ATA\_MJM_{i,t-1-k}}$, $\mathrm{AWCA\_MJM_{i,t-1-k}}$, $\mathrm{ACF_{i,t-1-k}}$, $\mathrm{ADEXP_{i,t-1-k}}$, $\mathrm{APROD_{i,t-1-k}}$, $\mathrm{ATREM_{i,t-1-k}}$, $\mathrm{FSD\_SCORE_{i,t-1-k}}$ and $\mathrm{KSMAX_{i,t-1-k}}$ (*k* is replaced by 1 and 2 for year *t*-2 and year *t*-3, respectively) are mixed but importantly insignificant.

The results are consistent with the hypotheses H3.1, H3.3 and H3.5 and previous research in the position that acquirers inflate the earnings by using abnormal accruals in the first year prior to the merger announcement, and also manipulate real earnings activities especially cash flow-based earnings management prior to the merger announcement in the first year. The Benford's Law results provide robust evidence of earnings management in the first year prior to the merger announcement.

For cash-financed acquirers, Table 3-4 shows that the means of abnormal accrual-based earnings management, abnormal real earnings management and Benford's Law proxies are mixed and importantly insignificant in years *t*-1, *t*-2 and year *t*-3. The results are consistent with the hypotheses H3.2, H3.4 and H3.6 and previous research showing that cash-financed acquirers do not manipulate their earnings prior to the merger announcement.

Table 3-4: Earnings management of share- and cash-financed acquirers

Earnings management proxies	Share-financed acquirers				Cash-financed acquirers		
	Year *t*-3	Year *t*-2	Year *t*-1		Year *t*-3	Year *t*-2	Year *t*-1
$\mathrm{FSD\_SCORE}_{i,t-1-k}$	0.039	0.044	0.045	***	0.036	0.035	0.034
$\mathrm{KSMAX}_{i,t-1-k}$	0.105	0.102	0.115	***	0.088	0.083	0.085
$\mathrm{ATA\_JM}_{i,t-1-k}$	-0.026	-0.009	0.026	*	0.003	-0.008	0.003
$\mathrm{AWCA\_JM}_{i,t-1-k}$	-0.022	-0.010	0.021	*	0.005	-0.004	0.005
$\mathrm{ATA\_MJM}_{i,t-1-k}$	-0.034	-0.013	0.020	*	-0.006	-0.017	-0.006
$\mathrm{AWCA\_MJM}_{i,t-1-k}$	-0.030	-0.015	0.014		-0.004	-0.013	-0.004
$\mathrm{ACF}_{i,t-1-k}$	0.028	-0.013	0.065	*	-0.057	-0.053	-0.035
$\mathrm{ADEXP}_{i,t-1-k}$	-0.004	-0.088	0.017		-0.072	0.002	-0.001
$\mathrm{APROD}_{i,t-1-k}$	0.064	-0.028	0.027		-0.021	-0.008	-0.037
$\mathrm{ATREM}_{i,t-1-k}$	0.022	-0.074	0.119	**	-0.181	-0.068	-0.034

Note: The table reports the means of earnings management and Benford's Law proxies for acquirers in the UK from 2007 and 2012. The sample includes 295 deals, consisting of 62 share-financed deals and 233 cash-financed deals. Significance is based on t-tests of the means. ***, ** and * indicate 1%, 5% and 10% levels of significance respectively. Please see the Appendix for variable descriptions. Years *t*-1, *t*-2 and *t*-3 are the first, second and third years with an earnings release preceding the announcement of the deal.

3.5.3 Multivariate analyses

3.5.3.1 Earnings management of share- and cash-financed acquirers and the rest of sample test

Table 3-5 presents comparisons of the means for earnings management proxies of share-financed acquirers and cash-financed acquirers and the rest of the sample for three years prior to a merger announcement. Panel A presents the difference between earnings management proxies of share-financed acquirers and cash-financed acquirers and the rest of the sample and the difference between earnings management proxies for share-financed acquirers and cash-financed acquirers in the first year prior to the merger announcement (year *t*-1). Regarding Benford's Law proxies, the mean $\mathrm{FSD\_SCORE}_{i,t-1}$ (0.045) and $\mathrm{KSMAX}_{i,t-1}$ (0.118) of share-financed acquirers are significantly higher than those of the rest of the sample (0.038 and 0.095 respectively) and significantly higher than the $\mathrm{FSD\_SCORE}_{i,t-1}$ (0.034) and $\mathrm{KSMAX}_{i,t-1}$ (0.085) of cash-financed acquirers, while the mean $\mathrm{FSD\_SCORE}_{i,t-1}$ and $\mathrm{KSMAX}_{i,t-1}$ of cash-financed acquirers are lower than those of the rest of the sample, but not significant. The results provide initial evidence that share-financed acquirers inflate accounting earnings to a greater extent than cash-financed acquirers and the rest of the sample. The results, as shown in Panels B and C, indicate that there is no evidence of share-financed acquirers or cash-financed acquirers inflating accounting earnings in the second and third years prior to the merger announcement.

Regarding accrual earnings management proxies, the abnormal total accruals and working capital accruals estimated using the Jones model ($\mathrm{ATA\_JM}_{i,t}$ (0.026) and $\mathrm{AWCA\_JM}_{i,t}$ (0.021)) and the modified Jones model ($\mathrm{ATA\_MJM}_{i,t}$ (0.020) and

$\mathrm{AWCA\_MJM_{i,t}}$ (0.014)) of share-financed acquirers are significantly higher than those of the rest of the sample using the Jones model ($\mathrm{ATA\_JM_{i,t}}$ (-0.010) and $\mathrm{AWCA\_JM_{i,t}}$ (-0.010)) and the modified Jones model ($\mathrm{ATA\_MJM_{i,t}}$ (-0.018) and $\mathrm{AWCA\_MJM_{i,t}}$ (-0.018)). Panel A also shows that the abnormal total and working capital accruals estimated using the Jones model and modified Jones model of share-financed acquirers are significantly higher than those of cash-financed acquirers, while the comparison of accrual earnings management of cash-financed acquirers and those of the rest of the sample are mixed and insignificant. As shown in Panel B and C, mean differences are not significant in year *t*-2 and year *t*-3.

Turning to real earnings management proxies, the mean $\mathrm{ACF_{i,t-1}}$ (0.065) and $\mathrm{ATREM_{i,t-1}}$ (0.148) of share-financed acquirers are significantly higher than those of the rest of the sample (-0.008 and -0.030 respectively) and significantly higher than the $\mathrm{ACF_{i,t-1}}$ (-0.035) and $\mathrm{ATREM_{i,t-1}}$ (-0.034) of cash-financed acquirers, while the mean $\mathrm{APROD_{i,t-1}}$ (0.017) and $\mathrm{ADEXP_{i,t-1}}$ (0.027) of share-financed acquirers are higher than those of the rest of the sample (-0.020 and -0.011 respectively) and higher than $\mathrm{APROD_{i,t-1}}$ (-0.001) and $\mathrm{ADEXP_{i,t-1}}$ (-0.037) of cash-financed acquirers, but not significant so in either case. In addition, the real earnings management proxies of cash-financed acquirers are higher than those of the rest of the sample, but not significant. As shown in Panel B and C, the mean differences are not significant in year *t*-2 and year *t*-3.

Table 3-5: Earnings management proxies of share- and cash-financed acquirers and the rest of the sample in the three years prior to M&A deal announcements

	Rest of sample vs share-finance deals			Rest of sample vs cash-finance deals			Share- vs cash-financed deals		
	Rest of sample	Share-financed deals	Difference	Rest of sample	Cash-financed deals	Difference	Share-financed deals	Cash-financed deals	Difference
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
A. Earnings management proxies' year *t*-1									
$\text{FSD\_SCORE}_{i,t-1}$	0.038	0.045	0.007 ***	0.038	0.034	-0.004	0.045	0.034	0.010 ***
$\text{KSMAX}_{i,t-1}$	0.095	0.118	0.023 ***	0.095	0.085	-0.010	0.118	0.085	0.033 ***
$\text{ATA\_JM}_{i,t-1}$	-0.010	0.026	0.037 *	-0.011	0.003	0.014	0.026	0.003	0.023 *
$\text{AWCA\_JM}_{i,t-1}$	-0.010	0.021	0.031 *	-0.010	0.005	0.015	0.021	0.005	0.016 *
$\text{ATA\_MJM}_{i,t-1}$	-0.018	0.020	0.038 *	-0.018	-0.006	0.012	0.020	-0.006	0.026
$\text{AWCA\_MJM}_{i,t-1}$	-0.018	0.014	0.032 **	-0.018	-0.004	0.014	0.014	-0.004	0.018 *
$\text{ACF}_{i,t-1}$	-0.008	0.065	0.074 *	-0.007	-0.035	-0.029	0.065	-0.035	0.101 **
$\text{ADEXP}_{i,t-1}$	-0.011	0.027	0.038	-0.010	-0.037	-0.027	0.027	-0.037	0.064
$\text{APROD}_{i,t-1}$	-0.020	0.017	0.036	-0.020	-0.001	0.019	0.017	-0.001	0.018
$\text{ATREM}_{i,t-1}$	-0.030	0.119	0.148 *	-0.028	-0.034	-0.005	0.119	-0.034	0.152 **
B. Earnings management proxies' year *t*-2									
$\text{FSD\_SCORE}_{i,t-2}$	0.038	0.044	0.005	0.039	0.035	-0.003	0.044	0.035	0.009
$\text{KSMAX}_{i,t-2}$	0.095	0.104	0.008	0.096	0.084	-0.013	0.104	0.084	0.020
$\text{ATA\_JM}_{i,t-2}$	-0.012	-0.009	0.003	-0.013	-0.008	0.005	-0.009	-0.008	-0.001
$\text{AWCA\_JM}_{i,t-2}$	-0.011	-0.010	0.001	-0.011	-0.004	0.007	-0.010	-0.004	-0.006
$\text{ATA\_MJM}_{i,t-2}$	-0.019	-0.013	0.007	-0.019	-0.017	0.002	-0.013	-0.017	0.004
$\text{AWCA\_MJM}_{i,t-2}$	-0.018	-0.015	0.003	-0.018	-0.013	0.005	-0.015	-0.013	-0.001
$\text{ACF}_{i,t-2}$	-0.016	-0.013	0.002	-0.015	-0.053	-0.038	-0.013	-0.053	0.039
$\text{ADEXP}_{i,t-}$	-0.006	-0.028	-0.021	-0.006	-0.008	-0.002	-0.028	-0.008	-0.019
$\text{APROD}_{i,t-2}$	-0.014	-0.088	-0.073	-0.015	0.002	0.017	-0.088	0.002	-0.090

Table 3-5: Earnings management proxies of share- and cash-financed acquirers and the rest of the sample in the three years prior to M&A deal announcements

	Rest of sample vs share-finance deals			Rest of sample vs cash-finance deals			Share- vs cash-financed deals		
	Rest of sample	Share-financed deals	Difference	Rest of sample	Cash-financed deals	Difference	Share-financed deals	Cash-financed deals	Difference
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
$\mathrm{ATREM}_{i,t-2}$	-0.025	-0.074	-0.049	-0.025	-0.068	-0.043	-0.074	-0.068	-0.006
C. Earnings management proxies' year *t*-3									
$\mathrm{FSD\_SCORE}_{i,t-3}$	0.039	0.039	0.000	0.039	0.036	-0.003	0.039	0.036	0.102
$\mathrm{KSMAX}_{i,t-3}$	0.096	0.105	0.009	0.097	0.088	-0.009	0.105	0.088	0.038
$\mathrm{ATA\_JM}_{i,t-3}$	-0.009	-0.026	-0.017	-0.010	0.003	0.012	-0.026	0.003	0.210
$\mathrm{AWCA\_JM}_{i,t-3}$	-0.008	-0.022	-0.014	-0.008	0.005	0.013	-0.022	0.005	0.217
$\mathrm{ATA\_MJM}_{i,t-3}$	-0.016	-0.034	-0.018	-0.016	-0.006	0.010	-0.034	-0.006	0.263
$\mathrm{AWCA\_MJM}_{i,t-3}$	-0.014	-0.030	-0.016	-0.015	-0.004	0.011	-0.030	-0.004	0.262
$\mathrm{ACF}_{i,t-3}$	-0.021	0.028	0.049	-0.020	-0.057	-0.037	0.028	-0.057	0.049
$\mathrm{ADEXP}_{i,t-3}$	0.003	0.064	0.061	0.004	-0.021	-0.025	0.064	-0.021	0.308
$\mathrm{APROD}_{i,t-3}$	-0.024	-0.004	0.021	-0.023	-0.072	-0.049	-0.004	-0.072	0.531
$\mathrm{ATREM}_{i,t-3}$	-0.052	0.022	0.073	-0.047	-0.181	-0.134	0.022	-0.181	0.040
Observations	7,727	62		7,727	233		62	233	

Note: The table reports the means of earnings management proxies for the final UK sample (n = 7,727 observations) from 2007 and 2012, including 295 deals consisting of 62 share-financed deals and 233 cash-financed deals. Columns 2-4 and 5-7 compare the mean earnings management and Benford's Law proxies of share-financed acquiring firms with the rest of the sample and cash-financed acquiring firms with the rest of the sample in years *t*-1, *t*-2 and *t*-3. Columns 8-10 compare the mean earnings management and Benford's Law proxies of share- versus cash-financed acquiring firms in years *t*-1, *t*-2 and *t*-3. Significance is based on t-test for the mean. ***, ** and * indicate 1%, 5% and 10% levels of significance respectively. Definitions of variables are in the Appendix.

3.5.3.2 Correlations

Table 3-6 shows correlations between selected variables, including abnormal accruals estimated using the Jones and the modified Jones models, abnormal real earnings management derived from the expectations models following Roychowdhury (2006), FSD_SCORE, KSMAX and control variables. $\mathrm{SMA}_{i,t}$ is positively related to $\mathrm{ATA\_JM}_{i,t-1}$ (0.024), $\mathrm{AWCA\_JM}_{i,t-1}$ (0.021), $\mathrm{ATA\_MJM}_{i,t-1}$ (0.023), $\mathrm{AWCA\_MJM}_{i,t-1}$ (0.019), $\mathrm{ACF}_{i,t-1}$ (0.023), $\mathrm{ATREM}_{i,t-1}$ (0.030), $\mathrm{FSD\_SCORE}_{i,t-1}$ (0.059) and $\mathrm{KSMAX}_{i,t-1}$ (0.052) and correlations are statistically significant, suggesting share-financed acquirers are engaged in income-increasing behaviour through both accrual-based earning and real earnings managements. However, the relationship between $\mathrm{CMA}_{i,t}$ and accrual-based and real earnings management proxies is insignificant. The table also indicates that abnormal accruals estimated by the Jones and modified Jones models, real earnings management and Benford's Law proxies are negatively correlated with $\mathrm{NOA}_{i,t-2}$ and $\mathrm{SEO}_{i,t-1}$ and positively correlated with $\mathrm{SIZE}_{i,t-2}$, $\mathrm{LEV}_{i,t-2}$, $\mathrm{MTB}_{i,t-2}$ and $\mathrm{ROA}_{i,t-1}$. In summary, the preliminary evidence is consistent with the hypotheses. There are correlations with most of the proxies for accrual-based earnings management and real earnings management as predicted.

Table 3-6: Correlations

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
(1) $\mathrm{ATA\_JM}_{i,t-1}$	1																	
(2) $\mathrm{AWCA\_JM}_{i,t-1}$	*0.979*	1																
(3) $\mathrm{ATA\_MJM}_{i,t-1}$	*0.974*	*0.954*	1															
(4) $\mathrm{AWCA\_MJM}_{i,t-1}$	*0.955*	*0.973*	0.981	1														
(5) $\mathrm{ACF}_{i,t-1}$	*0.079*	*0.073*	0.067	*0.060*	1													
(6) $\mathrm{APROD}_{i,t-1}$	*-0.023*	*-0.020*	-0.007	-0.006	*0.196*	1												
(7) $\mathrm{ADEXP}_{i,t-1}$	*0.086*	*0.085*	0.092	*0.092*	*-0.400*	*0.222*	1											
(8) $\mathrm{ATREM}_{i,t-1}$	*0.147*	*0.142*	0.143	*0.139*	*0.170*	*0.342*	*0.782*	1										
(9) $\mathrm{FSD\_SCORE}_{i,t-1}$	*-0.037*	*-0.040*	-0.024	*-0.030*	*0.043*	*0.037*	*-0.034*	0.005	1									
(10) $\mathrm{KSMAX}_{i,t-1}$	*-0.026*	*-0.029*	-0.014	-0.019	*0.068*	0.013	*-0.034*	0.022	*0.591*	1								
(11) $\mathrm{SMA}_{i,t}$	*0.024*	*0.021*	0.023	*0.019*	*0.023*	0.013	0.008	*0.030*	*0.059*	*0.052*	1							
(12) $\mathrm{CMA}_{i,t}$	0.018	*0.020*	0.014	0.016	-0.017	-0.018	0.007	-0.002	*-0.067*	*-0.049*	-0.016	1						
(13) $\mathrm{SIZE}_{i,t-2}$	0.014	0.017	0.006	0.009	*-0.059*	-0.013	0.000	*-0.061*	*-0.269*	*-0.223*	*-0.047*	*0.037*	1					
(14) $\mathrm{MTB}_{i,t-2}$	-0.001	0.001	-0.007	-0.007	*0.023*	*-0.040*	*-0.055*	*-0.031*	*0.069*	*0.055*	0.006	0.006	*0.100*	1				
(15) $\mathrm{LEV}_{i,t-2}$	*0.037*	*0.035*	0.035	*0.034*	*0.041*	*0.043*	*0.022*	*0.036*	*-0.125*	*-0.082*	*-0.020*	-0.017	*0.106*	*-0.079*	1			
(16) $\mathrm{NOA}_{i,t-2}$	*-0.027*	*-0.029*	-0.023	*-0.023*	*-0.112*	0.011	*0.133*	*0.052*	*-0.109*	*-0.082*	*-0.032*	-0.017	*0.063*	*-0.175*	*0.187*	1		
(17) $\mathrm{ROA}_{i,t-1}$	*0.384*	*0.398*	0.361	*0.374*	*-0.216*	*-0.130*	*0.106*	*-0.054*	*-0.254*	*-0.241*	*-0.029*	*0.063*	*0.298*	*-0.074*	0.013	*0.146*	1	
(18) $\mathrm{SEO}_{i,t-1}$	-0.049	-0.043	-0.052	-0.050	*0.113*	*0.037*	*-0.051*	*0.030*	*0.133*	*0.104*	*0.069*	*-0.038*	*-0.186*	*0.074*	0.007	-0.001	*-0.211*	1

Note: This table reports pooled Pearson correlations for the entire sample of 7,727 firm-years over the period 2007-2012. The values reported in italic indicate the corresponding coefficients are not significant at 5% level. Please see Appendix for variable descriptions.

3.5.3.3 Earnings management of share- and cash-financed acquirers prior to the merger announcement

Table 3-7 shows the deviation of the first digit of figures reported in the financial statements from that expected by Benford's Law. Under share-financed payment, the coefficients of $\mathrm{SMA}_{\mathrm{i,t}}$ derived from Equation 3-10 are positive (0.004 when the dependent variable is $\mathrm{FSD\_SCORE}_{\mathrm{i,t-1}}$; and 0.013 when the dependent variable is $\mathrm{KSMAX}_{\mathrm{i,t-1}}$) and consistently significant at the 1% level and 5% level in year *t*-1, respectively. The results indicate that the FSD_SCORE and KSMAX of share-financed acquirers are significantly higher than those of the rest of the sample. In contrast, the coefficients of $\mathrm{SMA}_{\mathrm{i,t}}$ in years *t*-2 and *t*-3 are 0.002 and -0.003 when the dependent variable is FSD_SCORE and -0.004 and 0.004 when the dependent variable is KSMAX, but not significant. In general, the results demonstrate that share-financed acquirers have higher deviations of first digits of the financial statements from Benford's Law, suggesting that share-financed acquirers engage in earnings management activities before the merger announcement. Thus, the evidence supports H3.1.

For cash-financed payment, the coefficients of $\mathrm{CMA}_{\mathrm{i,t}}$ derived from Equation 3-10 are mixed(-0.001 when the dependent variable is $\mathrm{FSD\_SCORE}_{\mathrm{i,t-1}}$; and 0.000 when the dependent variable is $\mathrm{KSMAX}_{\mathrm{i,t-1}}$), but not significant. The coefficients of $\mathrm{CMA}_{\mathrm{i,t}}$ in years *t*-2 and *t*-3 are 0.000 and 0.001 when the dependent variable is FSD_SCORE and -0.004 and 0.003 when the dependent variable is KSMAX, but not significant. In general, the results demonstrate that cash-financed acquirers do not exhibit higher deviations from Benford's Lam than those the rest of the sample, suggesting that cash-financed acquirers do not engage in earnings management activities. Thus, the evidence supports H3.2.

Table 3-7: Benford's Law approach of share- and cash-financed acquirers

	FSD_SCORE						KSMAX					
	Year *t-3*		Year *t-2*		Year *t-1*		Year *t-3*		Year *t-2*		Year *t-1*	
Intercept	0.056	***	0.054	***	0.054	***	0.138	***	0.134	***	0.135	***
t-statistic	*40.52*		*43.5*		*45.11*		*28.11*		*30.28*		*30.71*	
$\mathrm{SMA_{i,t}}$	-0.003		0.002		0.004	***	0.004		-0.004		0.013	**
t-statistic	*-1.42*		*1.1*		*2.78*		*0.57*		*-0.69*		*2.35*	
$\mathrm{CMA_{i,t}}$	0.001		0.000		-0.001		0.003		-0.004		0.000	
t-statistic	*0.93*		*-0.38*		*-0.73*		*0.79*		*-1.29*		*-0.15*	
$\mathrm{MTB_{i,t-2-k}}$	0.000	**	0.000	***	0.000	***	0.000	*	0.000	**	0.000	***
t-statistic	*2.55*		*3.07*		*3.68*		*1.77*		*2.19*		*2.77*	
$\mathrm{SIZE_{i,t-2-k}}$	-0.001	***	-0.001	***	-0.001	***	-0.004	***	-0.004	***	-0.003	***
t-statistic	*-14.09*		*-14.69*		*-14.75*		*-10.81*		*-11.14*		*-11.13*	
$\mathrm{ROA_{i,t-1-k}}$	-0.003	***	-0.004	***	-0.005	***	-0.012	***	-0.016	***	-0.019	***
t-statistic	*-5.64*		*-7.94*		*-8.84*		*-5.84*		*-8.36*		*-9.85*	
$\mathrm{LEV_{i,t-2-k}}$	-0.002	**	-0.002	**	-0.004	***	0.006		0.001		-0.006	*
t-statistic	*-2.35*		*-2.52*		*-3.9*		*1.62*		*0.44*		*-1.68*	
$\mathrm{NOA_{i,t-2-k}}$	-0.003	***	-0.003	***	-0.003	***	-0.007	**	-0.009	***	-0.006	***
t-statistic	*-4.27*		*-4.85*		*-4.79*		*-2.57*		*-3.61*		*-2.67*	
$\mathrm{SEO_{i,t-1-k}}$	0.000		0.000		0.000		0.002		0.001		0.000	
t-statistic	*0.57*		*0.73*		*0.72*		*1.06*		*0.8*		*-0.19*	
$Year\ Fixed\ Effects$	*yes*		*Yes*		*Yes*		*yes*		*yes*		*yes*	
$Industry\ Fixed\ Effects$	*yes*		*Yes*		*Yes*		*yes*		*yes*		*yes*	
Adjusted. R^2	*0.1683*		*0.1627*		*0.1688*		*0.0977*		*0.1072*		*0.1122*	

Note: This table reports the results of OLS regression over the period from 2007 to 2012. The total sample has 7,727 observations, including 295 deals consisting of 62 share-financed deals and 233 cash-financed deals. The regression is as follows:

$Y_{i,t-1-k} = \alpha + \beta_1(SMA_{i,t}) + \beta_2(CMA_{i,t}) + \beta_3(MTB_{i,t-2-k}) + \beta_4(SIZE_{i,t-2-k}) + \beta_5(ROA_{i,t-1-k}) + \beta_6(LEV_{i,t-2-k}) + \beta_7(NOA_{i,t-2-k}) + \beta_8(SEO_{i,t-1-k}) + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t-1-k}$ (Equation 3-10)

$\mathrm{Y_{i,t-1-k}}$ is replaced with $\mathrm{FSD\_SCORE_{i,t-1-k}}$, and $\mathrm{KSMAX_{i,t-1-k}}$. *k* is replaced by 0, 1 and 2 to investigate the accruals earnings of share- and cash-financed acquirers in years *t*-1, *t*-2 and *t*-3. The independent variables are defined in the Appendix.

Table 3-8 presents accruals earnings management derived from the Jones model with the intercept of share- and cash-financed acquirers prior to a merger announcement. For share-financed payments, the findings shows that the coefficients of $\mathrm{SMA_{i,t}}$ derived from Equation 3-10 are positive (0.033 when the dependent variable is $\mathrm{ATA\_JM_{i,t-1}}$; and 0.030 when the dependent variable is $\mathrm{AWCA\_JM_{i,t-1}}$) and both are significant at the 5% and 10% levels in year *t*-1. The results mean that abnormal total accruals and working capital accruals of share-financed acquirers are higher than for the rest of the sample by 3.3% and 3% respectively. Thus, the evidence supports H3.2. In year *t*-2, the coefficients of $\mathrm{SMA_{i,t}}$ are positive (0.020 when the dependent variable is $\mathrm{ATA\_JM_{i,t-2}}$; 0.018 when the dependent variable is $\mathrm{AWCA\_JM_{i,t-2}}$), but insignificant. In year *t*-3, the coefficients of $\mathrm{SMA_{i,t}}$ are positive (0.008 when the dependent variable is $\mathrm{ATA\_JM_{i,t-3}}$; 0.003 when the dependent variable is $\mathrm{AWCA\_JM_{i,t-3}}$), but insignificant. These results imply that share-financed acquiring firms manage total accruals and working capital accruals upward in the first year prior to the merger announcement after implementing a number of control variables.

For cash-financed payment, Table 3-8 shows that the coefficients of $\mathrm{CMA_{i,t}}$ derived from Equation 3-10 are negative (-0.004 when the dependent variable is $\mathrm{ATA\_JM_{i,t-1}}$; -0.007 when the dependent variable is $\mathrm{AWCA\_JM_{i,t-1}}$) and insignificant in year *t*-1. In year *t*-2, the coefficients of $\mathrm{CMA_{i,t}}$ are positive (-0.010 when the dependent variable is $\mathrm{ATA\_JM_{i,t-2}}$; -0.011 when the dependent variable is $\mathrm{AWCA\_JM_{i,t-2}}$) and insignificant. In year *t*-3, the coefficients of $\mathrm{CMA_{i,t}}$ are negative (-0.003 when the dependent variable is $\mathrm{ATA\_JM_{i,t-3}}$; -0.005 when the dependent variable is $\mathrm{AWCA\_JM_{i,t-3}}$) and insignificant. Thus, the evidence supports H3.4. These results imply that cash-financed acquiring firms do not manage total accruals and working capital accruals prior to the merger announcement.

Table 3-8: Abnormal total accruals and working capital accruals estimated by the Jones model with the intercept of share- and cash-financed acquirers

	ATA_JM						AWCA_JM					
	Year *t-3*		Year *t-2*		Year *t-1*		Year *t-3*		Year *t-2*		Year *t-1*	
Intercept	0.105	***	0.097	***	0.121	***	0.112	***	0.105	***	0.133	***
t-statistic	*10.32*		*10*		*13.1*		*10.06*		*9.9*		*12.94*	
$SMA_{i,t}$	0.008		0.020		0.033	**	0.003		0.018		0.030	*
t-statistic	*0.42*		*1.19*		*2.05*		*0.17*		*0.96*		*1.68*	
$CMA_{i,t}$	-0.003		-0.010		-0.004		-0.005		-0.011		-0.007	
t-statistic	*-0.32*		*-1.12*		*-0.52*		*-0.46*		*-1.2*		*-0.82*	
$MTB_{i,t-2-k}$	0.000		0.001	***	0.001	***	0.000		0.001	***	0.001	**
t-statistic	*1.38*		*3.06*		*2.66*		*1.35*		*2.8*		*2.11*	
$SIZE_{i,t-2-k}$	-0.007	***	-0.006	***	-0.006	***	-0.008	***	-0.007	***	-0.007	***
t-statistic	*-11.46*		*-10.21*		*-11.6*		*-11.71*		*-10.68*		*-12.03*	
$ROA_{i,t-1-k}$	0.186	***	0.182	***	0.186	***	0.195	***	0.189	***	0.194	***
t-statistic	*35*		*36.16*		*40.25*		*33.29*		*34*		*37.64*	
$LEV_{i,t-2-k}$	0.056	***	0.040	***	0.042	***	0.057	***	0.044	***	0.046	***
t-statistic	*7.07*		*5.02*		*5.4*		*6.53*		*5.01*		*5.34*	
$NOA_{i,t-2-k}$	-0.057	***	-0.055	***	-0.061	***	-0.059	***	-0.058	***	-0.066	***
t-statistic	*-9.18*		*-9.05*		*-10.38*		*-8.53*		*-8.61*		*-10.1*	
$SEO_{i,t-1-k}$	-0.001		-0.003		0.002		-0.004		-0.006		-0.001	
t-statistic	*-0.24*		*-0.98*		*0.69*		*-0.96*		*-1.5*		*-0.32*	
$Year\ Fixed\ Effects$	*Yes*		*yes*		*Yes*		*yes*		*Yes*		*yes*	
$Industry\ Fixed\ Effects$	*Yes*		*yes*		*Yes*		*yes*		*Yes*		*yes*	
Adjusted. R^2	*0.1618*		*0.1658*		*0.1898*		*0.1534*		*0.1562*		*0.1779*	

Note: This table reports the results of OLS regression over the period from 2007 to 2012. The total sample has 7,727 observations, including 295 deals consisting of 62 share-financed deals and 233 cash-financed deals. The regression is as follows:

$Y_{i,t-1-k} = \alpha + \beta_1(SMA_{i,t}) + \beta_2(CMA_{i,t}) + \beta_3(MTB_{i,t-2-k}) + \beta_4(SIZE_{i,t-2-k}) + \beta_5(ROA_{i,t-1-k}) + \beta_6(LEV_{i,t-2-k}) + \beta_7(NOA_{i,t-2-k}) + \beta_8(SEO_{i,t-1-k}) + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t-1-k}$ (Equation 3-10)

$Y_{i,t-1-k}$ is replaced with $ATA\_JM_{i,t-1-k}$, and $AWCA\_JM_{i,t-1-k}$. *k* is replaced by 0, 1 and 2 to investigate the accruals earnings of share- and cash-financed acquirers in years *t*-1, *t*-2 and *t*-3. The independent variables are defined in the Appendix.

Table 3-9 presents abnormal total accruals and abnormal working capital accruals derived by the modified Jones model with the intercept of share- and cash-financed acquirers prior to a merger announcement. For share-financed payment, Table 3-9 presents the coefficients of $\mathrm{SMA_{i,t}}$ are positive (0.024 when the dependent variable is $\mathrm{ATA\_MJM_{i,t-1}}$ and significant at the 10% level, 0.022 when the dependent variable is $\mathrm{AWCA\_MJM_{i,t-1}}$) but insignificant, while the coefficients of $\mathrm{SMA_{i,t}}$ are positive (0.015 when the dependent variable is $\mathrm{ATA\_MJM_{i,t-2}}$; 0.012 when the dependent variable is $\mathrm{AWCA\_MJM_{i,t-2}}$), but not significant in either case in year *t*-2. In year *t*-3, the coefficients of $\mathrm{CMA_{i,t}}$ are positive (0.009 when the dependent variable is $\mathrm{ATA\_MJM_{i,t-3}}$; 0.005 when the dependent variable is $\mathrm{AWCA\_MJM_{i,t-3}}$), but insignificant. Thus, the evidence supports H3.2. These results imply that share-financed acquiring firms manage total accrual upward in the first year prior to the merger announcement.

For cash-financed payments, Table 3-9 shows that the total and working capital accruals proxies estimated by the modified Jones model are consistent with the results shown in Table 3-8, the coefficients of $\mathrm{CMA_{i,t}}$ are insignificantly negative in year *t*-1 (-0.003 when the dependent variable is $\mathrm{ATA\_MJM_{i,t-1}}$; -0.006 when the dependent variable is $\mathrm{AWCA\_MJM_{i,t-1}}$). The coefficients of $\mathrm{CMA_{i,t}}$ are also insignificantly negative (-0.008 when the dependent variable is $\mathrm{ATA\_JM_{i,t-2}}$; -0.009 when the dependent variable is $\mathrm{AWCA\_MJM_{i,t-2}}$) and insignificant in year *t*-2. In year *t*-3, the coefficients of $\mathrm{CMA_{i,t}}$ are insignificantly negative (-0.004 when the dependent variable is $\mathrm{ATA\_MJM_{i,t-3}}$; -0.006 when the dependent variable is $\mathrm{AWCA\_MJM_{i,t-3}}$). Thus, the evidence supports H3.4. These results imply that across four alternative accruals earnings management proxies the cash-financed acquiring firms do not manage accrual earnings prior to the merger announcement.

Table 3-9: Abnormal total accruals and working capital accruals estimated by the modified Jones model with the intercept of share- and cash-financed acquirers

	ATA_MJM						AWCA_MJM					
	Year *t-3*		Year *t-2*		Year *t-1*		Year *t-3*		Year *t-2*		Year *t-1*	
Intercept	0.103	***	0.095	***	0.119	***	0.110	***	0.103	***	0.129	***
t-statistic	*10.18*		*9.92*		*13*		*9.83*		*9.74*		*12.69*	
$\mathrm{SMA}_{\mathrm{i,t}}$	0.009		0.015		0.024	*	0.005		0.012		0.022	
t-statistic	*0.52*		*0.9*		*1.56*		*0.24*		*0.64*		*1.28*	
$\mathrm{CMA}_{\mathrm{i,t}}$	-0.004		-0.008		-0.003		-0.006		-0.009		-0.006	
t-statistic	*-0.4*		*-0.94*		*-0.36*		*-0.57*		*-1*		*-0.63*	
$\mathrm{MTB}_{\mathrm{i,t-2-k}}$	0.000		0.001	***	0.001	***	0.000		0.001	***	0.001	**
t-statistic	*1.3*		*3.26*		*2.92*		*1.12*		*2.89*		*2.13*	
$\mathrm{SIZE}_{\mathrm{i,t-2-k}}$	-0.007	***	-0.006	***	-0.006	***	-0.008	***	-0.007	***	-0.007	***
t-statistic	*-11.36*		*-10.27*		*-11.71*		*-11.5*		*-10.68*		*-12.03*	
$\mathrm{ROA}_{\mathrm{i,t-1-k}}$	0.194	***	0.190	***	0.191	***	0.200	***	0.195	***	0.198	***
t-statistic	*36.48*		*38.04*		*41.88*		*34.15*		*35.42*		*38.97*	
$\mathrm{LEV}_{\mathrm{i,t-2-k}}$	0.053	***	0.037	***	0.042	***	0.054	***	0.042	***	0.046	***
t-statistic	*6.74*		*4.75*		*5.46*		*6.18*		*4.82*		*5.44*	
$\mathrm{NOA}_{\mathrm{i,t-2-k}}$	-0.057	***	-0.056	***	-0.062	***	-0.057	***	-0.058	***	-0.066	***
t-statistic	*-9.1*		*-9.22*		*-10.64*		*-8.29*		*-8.66*		*-10.24*	
$\mathrm{SEO}_{\mathrm{i,t-1-k}}$	0.003		0.000		0.005		-0.001		-0.003		0.000	
t-statistic	*0.73*		*0.05*		*1.46*		*-0.31*		*-0.75*		*0.12*	
$Year\ Fixed\ Effects$	*yes*		*yes*		*yes*		*yes*		*yes*		*yes*	
$Industry\ Fixed\ Effects$	*yes*		*yes*		*yes*		*yes*		*yes*		*yes*	
Adjusted. R^2	*0.17*		*0.1775*		*0.2006*		*0.1565*		*0.1639*		*0.1864*	

Note: This table reports the results of OLS regression over the period from 2007 to 2012. The total sample has 7,727 observations, including 295 deals consisting of 62 share-financed deals and 233 cash-financed deals. The regression is as follows:

$Y_{i,t-1-k} = \alpha + \beta_1(SMA_{i,t}) + \beta_2(CMA_{i,t}) + \beta_3(MTB_{i,t-2-k}) + \beta_4(SIZE_{i,t-2-k}) + \beta_5(ROA_{i,t-1-k}) + \beta_6(LEV_{i,t-2-k}) + \beta_7(NOA_{i,t-2-k}) + \beta_8(SEO_{i,t-1-k}) + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t-1-k}$ (Equation 3-10)

$\mathrm{Y}_{\mathrm{i,t-1-k}}$ is replaced with $\mathrm{ATA\_MJM}_{\mathrm{i,t-1-k}}$, and $\mathrm{AWCA\_MJM}_{\mathrm{i,t-1-k}}$. *k* is replaced by 0, 1 and 2 to investigate the accruals earnings of share- and cash-financed acquirers in years *t*-1, *t*-2 and *t*-3. The independent variables are defined in the Appendix.

Table 3-10 presents the real earnings management of share- and cash-financed acquirers prior to a merger announcement. For share-financed payments, Table 3-10 shows that the coefficients of $\mathrm{SMA}_{i,t}$ derived from Equation 3-11 are positive (0.063 when the dependent variable is $\mathrm{ACF}_{i,t-1}$; 0.050 when the dependent variable is $\mathrm{ADEXP}_{i,t-1}$; 0.022 when the dependent variable is $\mathrm{APROD}_{i,t-1}$; and 0.145 when the dependent variable is $\mathrm{ATREM}_{i,t-1}$). However, there are only $\mathrm{ACF}_{i,t-1}$ and $\mathrm{ATREM}_{i,t-1}$ which are significant at the 10% and 5% level in year *t*-1, respectively. Thus, the evidence supports H3.5. In year *t*-2, the coefficients of $\mathrm{SMA}_{i,t}$ are negative (-0.003 when the dependent variable is $\mathrm{ACF}_{i,t-2}$; -0.026 when the dependent variable is $\mathrm{ADEXP}_{i,t-2}$; -0.054 when the dependent variable is $\mathrm{APROD}_{i,t-2}$; and -0.043 when the dependent variable is $\mathrm{ATREM}_{i,t-2}$), but insignificant. In year *t*-3, the coefficients of $\mathrm{SMA}_{i,t}$ are mixed (-0.034 when the dependent variable is $\mathrm{ACF}_{i,t-3}$; 0.131 when the dependent variable is $\mathrm{ADEXP}_{i,t-3}$; 0.022 when the dependent variable is $\mathrm{APROD}_{i,t-3}$; and 0.048 when the dependent variable is $\mathrm{ATREM}_{i,t-3}$), but insignificant. These results imply that share-financed acquiring firms manipulate real earnings activities in the first year prior to the merger announcement especially sale-based real earnings management.

For cash-financed payment, Table 3-10 shows that the coefficients of $\mathrm{CMA}_{i,t}$ derived from Equation 3-11 are mixed (-0.005 when the dependent variable is $\mathrm{ACF}_{i,t-1}$; 0.007 when the dependent variable is $\mathrm{ADEXP}_{i,t-1}$; -0.013 when the dependent variable is $\mathrm{APROD}_{i,t-1}$; and 0.000 when the dependent variable is $\mathrm{ATREM}_{i,t-1}$) and insignificant in year *t*-1. In years *t*-2 and *t*-3, the coefficients of $\mathrm{CMA}_{i,t}$ are mixed and insignificant when the dependent variables are $\mathrm{ACF}_{i,t-2}$, $\mathrm{ADEXP}_{i,t-2}$, $\mathrm{APROD}_{i,t-2}$, $\mathrm{ATREM}_{i,t-2}$,$\mathrm{ACF}_{i,t-3}$, $\mathrm{ADEXP}_{i,t-3}$, $\mathrm{APROD}_{i,t-3}$ and $\mathrm{ATREM}_{i,t-3}$. Thus, the evidence supports H3.6. These results imply that cash-financed acquiring firms do note manipulate real earnings activities prior to the merger announcement.

Table 3-10: Abnormal real earnings management of share- and cash-financed acquirers

	ACF			ADEXP			APROD			ATREM		
	Year *t*-3	Year *t*-2	Year *t*-1	Year *t*-3	Year *t*-2	Year *t*-1	Year *t*-3	Year *t*-2	Year *t*-1	Year *t*-3	Year *t*-2	Year *t*-1
Intercept	-0.040	-0.059 **	0.002	0.127 ***	-0.006	-0.098 ***	-0.100 ***	-0.095 ***	-0.056 ***	0.055	-0.076 *	-0.092 **
t-statistic	*-1.16*	*-2.41*	*0.1*	*2.82*	*-0.16*	*-2.88*	*-3.5*	*-4.02*	*-2.98*	*1.06*	*-1.86*	*-2.55*
$\mathrm{SMA_{i,t}}$	-0.034	-0.003	0.063 *	0.131	-0.026	0.050	0.022	-0.054	0.022	0.048	-0.043	0.145 **
t-statistic	*-0.55*	*-0.08*	*1.77*	*1.64*	*-0.39*	*0.85*	*0.41*	*-1.25*	*0.64*	*0.52*	*-0.6*	*2.3*
$\mathrm{CMA_{i,t}}$	0.002	-0.009	-0.005	-0.057	0.012	0.007	-0.001	0.011	-0.013	-0.083 *	-0.024	0.000
t-statistic	*0.06*	*-0.38*	*-0.28*	*-1.31*	*0.33*	*0.22*	*-0.03*	*0.49*	*-0.76*	*-1.67*	*-0.63*	*0.01*
$\mathrm{MTB_{i,t-2-k}}$	0.001	0.000	0.001	-0.005 ***	-0.002	-0.004 ***	-0.004 ***	-0.003 ***	-0.003 ***	-0.004 **	-0.001	-0.003 **
t-statistic	*0.93*	*0.37*	*0.79*	*-3.2*	*-1.5*	*-3.43*	*-4.63*	*-4.07*	*-4.47*	*-2.52*	*-0.99*	*-2.28*
$\mathrm{SIZE_{i,t-2-k}}$	-0.002	0.003 ***	0.000 ***	-0.006 **	-0.006 ***	-0.004 ***	0.007 ***	0.006 ***	0.003 ***	-0.008 **	-0.005 ***	-0.007 ***
t-statistic	*-0.81*	*1.75*	*-0.03*	*-2.04*	*-2.53*	*-1.92*	*3.77*	*4.11*	*2.49*	*-2.46*	*-2.14*	*-3.16*
$\mathrm{ROA_{i,t-1-k}}$	-0.259 ***	-0.207 ***	-0.171 ***	0.189 ***	0.133 ***	0.128 ***	-0.153 ***	-0.145 ***	-0.111 ***	-0.038	-0.094 ***	-0.066 ***
t-statistic	*-14.1*	*-15.76*	*-16.68*	*7.98*	*6.72*	*7.39*	*-9.48*	*-11.03*	*-11.02*	*-1.38*	*-4.38*	*-3.57*
$\mathrm{LEV_{i,t-2-k}}$	0.137 ***	0.084 ***	0.055 ***	0.062 *	0.031	0.057 **	0.012	0.035 *	0.046 ***	0.135 ***	0.075 **	0.078 **
t-statistic	*4.96*	*4.04*	*3.17*	*1.74*	*0.98*	*1.97*	*0.51*	*1.72*	*2.79*	*3.3*	*2.22*	*2.56*
$\mathrm{SEO_{i,t-1-k}}$	0.065 ***	0.044 ***	0.049 ***	-0.051 ***	-0.033 **	-0.022 *	0.002	0.008	0.018 **	0.022	0.003	0.024 *
t-statistic	*5.01*	*4.8*	*6.43*	*-3.03*	*-2.35*	*-1.76*	*0.17*	*0.94*	*2.49*	*1.15*	*0.2*	*1.78*
$Year\ Fixed\ Effects$	*Yes*	*yes*	*Yes*	*yes*	*yes*	*yes*	*yes*	*Yes*	*yes*	*yes*	*yes*	*yes*
$Industry\ Fixed\ Effects$	*Yes*	*yes*	*Yes*	*yes*	*yes*	*yes*	*yes*	*Yes*	*yes*	*yes*	*yes*	*yes*
Adjusted. R^2	*0.0655*	*0.0515*	*0.0655*	*0.0262*	*0.026*	*0.0309*	*0.0655*	*0.0194*	*0.018*	*0.0272*	*0.0158*	*0.0179*

Note: This table reports the results of OLS regression over the period from 2007 to 2012. The total sample has 7,727 observations, including 295 deals consisting of 62 share-financed deals and 233 cash-financed deals. The regression is as follows:

$$Y_{i,t-1-k} = \alpha + \beta_1(SMA_{i,t}) + \beta_2(CMA_{i,t}) + \beta_3(MTB_{i,t-2-k}) + \beta_4(SIZE_{i,t-2-k}) + \beta_5(ROA_{i,t-1-k}) + \beta_6(LEV_{i,t-2-k}) + \beta_7(SEO_{i,t-1-k}) + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t-1-k}$$ (Equation 3-11)

$\mathrm{Y_{i,t-1-k}}$ is replaced with $\mathrm{ACF_{i,t-1-k}}$, $\mathrm{ADEXP_{i,t-1-k}}$, $\mathrm{APROD_{i,t-1-k}}$ and $\mathrm{ATREM_{i,t-1-k}}$. *k* is replaced by 0, 1 and 2 to investigate the real earnings management of share- and cash-financed acquirers in years *t*-1, *t*-2 and *t*-3. The independent variables are defined in the Appendix.

3.5.3.4 Earnings management of share-financed acquirers versus cash-financed acquirers prior to the merger announcement

Under Benford's Law proxies, the first-digit deviation of figures reported in the financial statements from that expected by Benford's Law, Table 3-11 reports that the coefficient of $\mathrm{SMA\_CMA}_{i,t}$ derived from Equation 3-12 are positive (0.004 when the dependent variable is $\mathrm{FSD\_SCORE}_{i,t-1}$ and 0.007 when the dependent variable is $\mathrm{KSMAX}_{i,t-1}$) and significant at the 10% level in year *t-1*. The results indicate that the FSD_SCORE and KSMAX of share-financed acquirers are significantly higher than those of cash-financed acquirers. In contrast, the coefficients of $\mathrm{SMA\_CMA}_{i,t}$ in years *t*-2 and *t*-3 are both insignificant when the dependent variable are $\mathrm{FSD\_SCORE}_{i,t-2}$, $\mathrm{FSD\_SCORE}_{i,t-3}$, $\mathrm{KSMAX}_{i,t-2}$ and $\mathrm{KSMAX}_{i,t-3}$. In general, the results demonstrate that share-financed acquirers have more deviations from Benford's Law than cash-financed acquirers in year *t*-1, suggesting that share-financed acquirers involve in earnings management before the merger announcement. Thus, the evidence supports H3.7.

Table 3-11: Benford's Law of share-financed acquirers versus cash-financed acquirers

	FSD_SCORE						KSMAX					
	Year *t*-3		Year *t*-2		Year *t*-1		Year *t*-3		Year *t*-2		Year *t*-1	
Intercept	0.055	***	0.053	***	0.054	***	0.117	***	0.121	***	0.144	***
t-statistic	*7.81*		*9.45*		*8.48*		*4.53*		*6.31*		*6.39*	
$\mathrm{SMA\_CMA}_{i,t}$	-0.003		0.002		0.004	*	0.005		0.000		0.007	*
t-statistic	*-1.02*		*0.76*		*1.8*		*0.57*		*0.06*		*0.85*	
$\mathrm{MTB}_{i,t-2-k}$	0.000		0.000	*	0.000		0.001		0.001		0.000	
t-statistic	*0.85*		*1.67*		*1.25*		*0.89*		*1.64*		*-0.04*	
$\mathrm{SIZE}_{i,t-2-k}$	-0.001	**	-0.001	***	-0.001	**	-0.003		-0.004	***	-0.005	***
t-statistic	*-2.61*		*-3.32*		*-2.52*		*-1.45*		*-3.22*		*-3.12*	
$\mathrm{ROA}_{i,t-1-k}$	-0.005		-0.005	***	-0.011	***	-0.013		-0.010	***	-0.021	***
t-statistic	*-1.02*		*-2.07*		*-3.08*		*-0.79*		*-1.07*		*-1.66*	
$\mathrm{LEV}_{i,t-2-k}$	-0.015	**	-0.010	*	-0.004		-0.054	**	-0.006		0.002	
t-statistic	*-2.25*		*-1.71*		*-0.63*		*-2.2*		*-0.32*		*0.09*	
$\mathrm{NOA}_{i,t-2-k}$	-0.003		-0.003		-0.009	**	0.022		0.000		-0.030	**
t-statistic	*-0.88*		*-0.88*		*-2.53*		*1.58*		*0.03*		*-2.51*	
$\mathrm{SEO}_{i,t-1-k}$	-0.002		0.000		-0.002		-0.002		0.002		0.003	
t-statistic	*-0.63*		*0.1*		*-0.87*		*-0.26*		*0.27*		*0.38*	
$Year\ Fixed\ Effects$	Yes		yes		yes		yes		Yes		yes	
$Industry\ Fixed\ Effects$	Yes		yes		yes		yes		Yes		yes	
Adjusted. R^2	*0.1046*		*0.1771*		*0.1582*		*0.1056*		*0.0538*		*0.1154*	

Note: This table reports the results of OLS regression over the period from 2007 to 2012. The total sample has 295 deals, including 62 share-financed deals and 233 cash-financed deals. The regression is as follows:

$Y_{i,t-1-k} = \alpha + \beta_1(SMA\_CMA_{i,t}) + \beta_2(MTB_{i,t-2-k}) + \beta_3(SIZE_{i,t-2-k}) + \beta_4(ROA_{i,t-1-k}) + \beta_5(LEV_{i,t-2-k}) + \beta_6(NOA_{i,t-2-k}) + \beta_7(SEO_{i,t-1-k}) + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t-1-k}$ (Equation 3-12)

$\mathrm{Y}_{i,t-1-k}$ is replaced with $\mathrm{FSD\_SCORE}_{i,t-1-k}$, and $\mathrm{KSMAX}_{i,t-1-k}$. *k* is replaced by 0, 1 and 2 to investigate the different accruals earnings of share- and cash-financed acquirers in years *t*-1, *t*-2 and *t*-3. The independent variables are defined in the Appendix.

Table 3-12 presents the comparison of accruals earnings management estimated by the Jones model with the intercept of share-financed acquirers and cash-financed acquirers prior to a merger announcement. Table 3-12 shows that the coefficients of $\mathrm{SMA\_CMA_{i,t}}$ derived from Equation 3-12 in year *t*-1 are positive (0.053 when the dependent variable is $\mathrm{ATA\_JM_{i,t-1}}$ and 0.038 when the dependent variable is $\mathrm{AWCA\_JM_{i,t-1}}$) and significant at the 5% and 10% level, respectively. The results mean that abnormal total accruals and working capital accruals of share-financed acquirers are higher those of cash-financed acquirers by 5.3% and 3.8%. Thus, the evidence supports H3.8. In year *t*-2, the coefficients of $\mathrm{SMA\_CMA_{i,t}}$ are positive (0.033 when the dependent variable is $\mathrm{ATA\_JM_{i,t-2}}$; 0.022 when the dependent variable is $\mathrm{AWCA\_JM_{i,t-2}}$), but insignificant. In year *t*-3, the coefficients of $\mathrm{SMA\_CMA_{i,t}}$ are positive (0.002 when the dependent variable is $\mathrm{ATA\_JM_{i,t-3}}$; 0.009 when the dependent variable is $\mathrm{AWCA\_JM_{i,t-3}}$), but also insignificant. These results implicate that share-financed acquiring firms have higher accrual-based earnings management than cash-financed acquiring firms have in the first year prior to the merger announcement, after implementing a number of control variables.

Table 3-12: Abnormal total accruals and working capital accruals estimated by the Jones model with the intercept of share-financed acquirers versus cash-financed acquirers

	ATA_JM						AWCA_JM					
	Year *t-3*		Year *t-2*		Year *t-1*		Year *t-3*		Year *t-2*		Year *t-1*	
Intercept	0.084		-0.037		0.008		0.102		-0.059		0.039	
t-statistic	*1.45*		*-0.66*		*0.13*		*1.62*		*-0.91*		*0.64*	
$\mathrm{SMA\_CMA}_{\mathrm{i,t}}$	0.002		0.033		0.053	**	0.009		0.022		0.038	*
t-statistic	*0.09*		*1.6*		*2.34*		*0.36*		*0.93*		*1.59*	
$\mathrm{MTB}_{\mathrm{i,t-2-k}}$	0.003	**	0.002		0.000		0.003	**	0.004	**	-0.001	
t-statistic	*2.3*		*1.25*		*-0.2*		*2.4*		*2.03*		*-0.64*	
$\mathrm{SIZE}_{\mathrm{i,t-2-k}}$	-0.007	*	0.003		0.000		-0.008	*	0.004		-0.002	
t-statistic	*-1.78*		*0.7*		*-0.11*		*-1.95*		*0.91*		*-0.42*	
$\mathrm{ROA}_{\mathrm{i,t-1-k}}$	0.143	***	0.147	***	0.178	***	0.148	***	0.137	***	0.171	***
t-statistic	*4.31*		*5.8*		*5.25*		*4.16*		*4.73*		*4.77*	
$\mathrm{LEV}_{\mathrm{i,t-2-k}}$	0.047		0.041		0.071		-0.007		-0.016		0.043	
t-statistic	*1.04*		*0.89*		*1.35*		*-0.15*		*-0.31*		*0.78*	
$\mathrm{NOA}_{\mathrm{i,t-2-k}}$	-0.011		-0.080	***	-0.036		-0.001		-0.066	**	-0.031	
t-statistic	*-0.38*		*-2.73*		*-1.17*		*-0.02*		*-1.99*		*-0.95*	
$\mathrm{SEO}_{\mathrm{i,t-1-k}}$	-0.010		-0.030	*	0.012		-0.013		-0.025		0.012	
t-statistic	*-0.49*		*-1.78*		*0.62*		*-0.62*		*-1.3*		*0.58*	
$Year\ Fixed\ Effects$	*yes*		*yes*		*Yes*		*yes*		*yes*		*yes*	
$Industry\ Fixed\ Effects$	*yes*		*yes*		*Yes*		*yes*		*yes*		*yes*	
Adjusted. R^2	*0.1911*		*0.2681*		*0.0965*		*0.1933*		*0.2313*		*0.1322*	

Note: This table reports the results of OLS regression over the period from 2007 to 2012. The total sample has 295 deals, including 62 share-financed deals and 233 cash-financed deals. The regression is as follows:

$Y_{i,t-1-k} = \alpha + \beta_1(SMA\_CMA_{i,t}) + \beta_2(MTB_{i,t-2-k}) + \beta_3(SIZE_{i,t-2-k}) + \beta_4(ROA_{i,t-1-k}) + \beta_5(LEV_{i,t-2-k}) + \beta_6(NOA_{i,t-2-k}) + \beta_7(SEO_{i,t-1-k}) +$

$Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t-1-k}$ (Equation 3-12)

$\mathrm{Y}_{\mathrm{i,t-1-k}}$ is replaced with $\mathrm{ATA\_JM}_{\mathrm{i,t-1-k}}$, and $\mathrm{AWCA\_JM}_{\mathrm{i,t-1-k}}$. *k* is replaced by 0, 1 and 2 to investigate the different accruals earnings of share- and cash-financed acquirers in years *t*-1, *t*-2 and *t*-3. The independent variables are defined in the Appendix.

Table 3-13 presents the comparison of accruals earnings management estimated by the modified Jones model with the intercept of share-financed acquirers and cash-financed acquirers prior to the merger announcement. The results show that the coefficients of $\mathrm{SMA\_CMA_{i,t}}$ derived from Equation 3-12 in year *t*-1 are significant positive (0.042 when the dependent variable is $\mathrm{ATA\_MJM_{i,t-1}}$ and significant at 10%) and insignificant positive (0.038 when the dependent variable is $\mathrm{AWCA\_MJM_{i,t-1}}$), while the coefficients of $\mathrm{SMA\_CMA_{i,t}}$ are positive (0.030 when the dependent variable is $\mathrm{ATA\_MJM_{i,t-2}}$; 0.022 when the dependent variable is $\mathrm{AWCA\_MJM_{i,t-2}}$), but insignificant in year *t*-2. In year *t*-3, the coefficients of $\mathrm{SMA\_CMA_{i,t}}$ are positive (0.008 when the dependent variable is $\mathrm{ATA\_JM_{i,t-3}}$; 0.009 when the dependent variable is $\mathrm{AWCA\_MJM_{i,t-3}}$), but also insignificant. Thus, the evidence supports H3.8. These results implicate that share-financed acquiring firms manage accrual upwards higher than cash-financed acquiring firms do in the first year prior to the merger announcement.

Table 3-13: Abnormal total accruals and working capital accruals estimated by the modified Jones model with the intercept of share-financed acquirers versus cash-financed acquirers

	ATA_MJM			AWCA_MJM		
	Year *t*-3	Year *t*-2	Year *t*-1	Year *t*-3	Year *t*-2	Year *t*-1
Intercept	0.115 **	-0.055	0.029	0.102	-0.059	0.039
t-statistic	*1.98*	*-0.95*	*0.5*	*1.62*	*-0.91*	*0.64*
$\mathrm{SMA\_CMA}_{i,t}$	0.008	0.030	0.042 *	0.009	0.022	0.038
t-statistic	*0.34*	*1.36*	*1.91*	*0.36*	*0.93*	*1.59*
$\mathrm{MTB}_{i,t-2-k}$	0.003 **	0.003	-0.001	0.003 **	0.004 **	-0.001
t-statistic	*2.23*	*1.64*	*-0.37*	*2.4*	*2.03*	*-0.64*
$\mathrm{SIZE}_{i,t-2-k}$	-0.008 **	0.003	-0.002	-0.008 *	0.004	-0.002
t-statistic	*-2.08*	*0.86*	*-0.41*	*-1.95*	*0.91*	*-0.42*
$\mathrm{ROA}_{i,t-1-k}$	0.154 ***	0.154 ***	0.182 ***	0.148 ***	0.137 ***	0.171 ***
t-statistic	*4.63*	*5.81*	*5.5*	*4.16*	*4.73*	*4.77*
$\mathrm{LEV}_{i,t-2-k}$	0.009	0.007	0.055	-0.007	-0.016	0.043
t-statistic	*0.19*	*0.15*	*1.07*	*-0.15*	*-0.31*	*0.78*
$\mathrm{NOA}_{i,t-2-k}$	-0.016	-0.073 **	-0.027	-0.001	-0.066 **	-0.031
t-statistic	*-0.52*	*-2.4*	*-0.88*	*-0.02*	*-1.99*	*-0.95*
$\mathrm{SEO}_{i,t-1-k}$	-0.006	-0.020	0.018	-0.013	-0.025	0.012
t-statistic	*-0.32*	*-1.16*	*0.93*	*-0.62*	*-1.3*	*0.58*
$Year\ Fixed\ Effects$	*yes*	*yes*	*yes*	*yes*	*Yes*	*yes*
$Industry\ Fixed\ Effects$	*yes*	*yes*	*yes*	*yes*	*Yes*	*yes*
Adjusted. R^2	*0.2032*	*0.2379*	*0.1378*	*0.1933*	*0.2313*	*0.1322*

Note: This table reports the results of OLS regression over the period from 2007 to 2012. The total sample has 295 deals, including 62 share-financed deals and 233 cash-financed deals. The regression is as follows:

$Y_{i,t-1-k} = \alpha + \beta_1(SMA\_CMA_{i,t}) + \beta_2(MTB_{i,t-2-k}) + \beta_3(SIZE_{i,t-2-k}) + \beta_4(ROA_{i,t-1-k}) + \beta_5(LEV_{i,t-2-k}) + \beta_6(NOA_{i,t-2-k}) + \beta_7(SEO_{i,t-1-k}) +$
$Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t-1-k}$ (Equation 3-12)

$\mathrm{Y}_{i,t-1-k}$ is replaced with $\mathrm{ATA\_MJM}_{i,t-1-k}$, and $\mathrm{AWCA\_MJM}_{i,t-1-k}$. *k* is replaced by 0, 1 and 2 to investigate the different accruals earnings of share- and cash-financed acquirers in years *t*-1, *t*-2 and *t*-3. The independent variables are defined in the Appendix.

Table 3-14 presents the comparison of real earnings management of share-financed acquirers cash-financed acquirers prior to the merger announcement. Table 3-14 shows that the coefficients of $\mathrm{SMA\_CMA_{i,t}}$ derived from Equation 3-13 are mixed (0.064 when the dependent variable is $\mathrm{ACF_{i,t-1}}$; -0.021 when the dependent variable is $\mathrm{ADEXP_{i,t-1}}$; 0.098 when the dependent variable is $\mathrm{APROD_{i,t-1}}$; and 0.083 when the dependent variable is $\mathrm{ATREM_{i,t-1}}$). However, only $\mathrm{ACF_{i,t-1}}$ is significantly positive at the 10% level in year *t*-1. Thus, the evidence supports H3.8. In years *t*-2 and *t*-3, the coefficients of $\mathrm{SMA\_CMA_{i,t}}$ are mixed and insignificant when the dependent variable is $\mathrm{ACF_{i,t-2}}$, $\mathrm{ADEXP_{i,t-2}}$, $\mathrm{APROD_{i,t-2}}$, $\mathrm{ATREM_{i,t-2}}$, $\mathrm{ACF_{i,t-3}}$, $\mathrm{ADEXP_{i,t-3}}$; $\mathrm{APROD_{i,t-3}}$ and $\mathrm{ATREM_{i,t-3}}$. These results implicate that share-financed acquiring firms have higher real earnings management than cash-financed acquiring firms have especially sale-based earnings management in the first year prior to the merger announcement, after implementing a number of control variables.

Table 3-14: Abnormal real earnings management of share- versus cash-financed acquirers

	ACF			ADEXP			APROD			ATREM		
	Year *t*-3	Year *t*-2	Year *t*-1	Year *t*-3	Year *t*-2	Year *t*-1	Year *t*-3	Year *t*-2	Year *t*-1	Year *t*-3	Year *t*-2	Year *t*-1
Intercept	0.300	-0.032	0.455 ***	0.379	0.473 *	-0.217	-0.114	0.120	-0.063	0.478	0.422	0.062
t-statistic	*1.02*	*-0.19*	*3.28*	*1.02*	*1.94*	*-1.09*	*-0.59*	*0.78*	*-0.47*	*1.18*	*1.45*	*0.26*
$SMA\_CMA_{i,t}$	-0.086	0.088	0.064 *	0.171	-0.104	-0.021	0.055	-0.026	0.098	0.108	0.069	0.083
t-statistic	*-0.74*	*1.4*	*1.18*	*1.13*	*-1.12*	*-0.27*	*0.7*	*-0.44*	*1.81*	*0.66*	*0.62*	*0.87*
$\mathrm{MTB}_{\mathrm{i,t-2-k}}$	0.022 ***	0.000	0.009 **	-0.005	-0.004	-0.016 ***	0.003	-0.003	-0.002	0.014	0.000	-0.006
t-statistic	*3.44*	*0.1*	*2.22*	*-0.66*	*-0.63*	*-2.78*	*0.72*	*-0.78*	*-0.58*	*1.58*	*-0.01*	*-0.8*
$\mathrm{SIZE}_{\mathrm{i,t-2-k}}$	-0.028	0.007	-0.025 ***	-0.044	-0.039 **	0.005	0.005	-0.009	0.004	-0.063 **	-0.036 *	-0.015
t-statistic	*-1.35*	*0.66*	*-2.66*	*-1.58*	*-2.18*	*0.33*	*0.38*	*-0.9*	*0.38*	*-2.08*	*-1.71*	*-0.86*
$\mathrm{ROA}_{\mathrm{i,t-1-k}}$	-0.193	-0.056	-0.055	0.310	0.050	-0.127	-0.112	-0.064	-0.044	0.152	-0.058	-0.150
t-statistic	*-1.12*	*-0.74*	*-0.67*	*1.52*	*0.49*	*-1.16*	*-0.97*	*-0.9*	*-0.54*	*0.68*	*-0.48*	*-1.14*
$\mathrm{LEV}_{\mathrm{i,t-2-k}}$	0.107	-0.094	0.029	0.774 ***	0.399 **	-0.154	0.278 *	0.329 **	0.218 *	0.873 ***	0.376	-0.228
t-statistic	*0.46*	*-0.68*	*0.23*	*2.8*	*2.08*	*-0.89*	*1.74*	*2.56*	*1.75*	*2.92*	*1.64*	*-1.09*
$\mathrm{SEO}_{\mathrm{i,t-1-k}}$	0.203 **	-0.010	0.015	-0.164	-0.180 **	0.009	0.135 **	0.012	-0.015	0.003	-0.312 ***	0.097
t-statistic	*2.02*	*-0.21*	*0.33*	*-1.24*	*-2.35*	*0.13*	*1.99*	*0.25*	*-0.32*	*0.02*	*-3.41*	*1.2*
$Year\ Fixed\ Effects$	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*Yes*	*Yes*	*yes*	*yes*	*yes*	*yes*
$Industry\ Fixed\ Effects$	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*Yes*	*Yes*	*yes*	*yes*	*yes*	*yes*
Adjusted. R^2	*0.0812*	*-0.0712*	*0.1272*	*-0.0509*	*-0.0646*	*0.0653*	*-0.0073*	*0.0374*	*0.1579*	*0.066*	*-0.0162*	*0.1061*

Note: This table reports the results of OLS regression over the period from 2007 to 2012. The total sample has 7,727 observations, including 295 deals consisting of 62 share-financed deals and 233 cash-financed deals. The regression is as follows: $Y_{i,t-1-k} = \alpha + \beta_1(SMA\_CMA_{i,t}) + \beta_2(MTB_{i,t-2-k}) + \beta_3(SIZE_{i,t-2-k}) + \beta_4(ROA_{i,t-1-k}) + \beta_5(LEV_{i,t-2-k}) + \beta_6(SEO_{i,t-1-k}) + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t-1-k}$ (Equation 3-13)

$\mathrm{Y}_{\mathrm{i,t-1-k}}$ is replaced with $\mathrm{ACF}_{\mathrm{i,t-1-k}}$, $\mathrm{ADEXP}_{\mathrm{i,t-1-k}}$, $\mathrm{APROD}_{\mathrm{i,t-1-k}}$ and $\mathrm{ATREM}_{\mathrm{i,t-1-k}}$. *k* is replaced by 0, 1 and 2 to investigate the effect of board connections on real earnings management in years *t*-1, *t*-2 and *t*-3. The independent variables are defined in the Appendix.

3.5.4 Propensity score matching: two samples t-test.

Armstrong et al. 2010 and Lawrence et al. (2011) contend that the results derived from regression frameworks could suffer from misspecification because the different treatments of the control variables and the dependent variable could lead to different results. They suggest that propensity score matching could address this concern. Following Armstrong et al. 2010 and Lawrence et al. (2011), Burnett et al. (2012) use propensity score matching to reduce the influences of firm characteristics on the association between suspect accruals and high audit quality. They argue that the fundamental differences in firm characteristics may still influence the results of regression despite the use of control variables. In this study, it is possible that firms involved in M&A activities might be fundamentally different from those that are not.

Thus, propensity score matching method is employed for testing two samples t-test to control for differences in the relevant dimensions between two samples (1) M&A firms sample and (2) non-M&A firms sample by forming new alternative matched samples. The samples comprise M&A firms and non-M&A firms that are similar to the M&A deals in terms of performance (ROA) and basic characteristics (SIZE, LEV and MTB). Specifically, the procedure suggested by Chen et al. (2011a), Burnett et al. (2012) and Shipman et al. (2017) is closely followed. First, a probit regression is run to estimate the likelihood of conducting M&A deals employing the determinants of M&A deals based on explanatory variables (firm characteristics). The explanatory variables are ROA or SIZE, LEV and MTB. The two alternative probit regressions are as follows:

Equation 3-14

$$MA_{i,t} = \alpha + \beta_1(ROA_{i,t-1})$$

Equation 3-15

$$MA_{i,t} = \alpha + \beta_1(MTB_{i,t-1}) + \beta_2(SIZE_{i,t-1}) + \beta_3(LEV_{i,t-1})$$

The sample used to estimate the logit regressions (Equation 3-14 and Equation 3-15) consists of the 295 deals in the treatment sample (share- and cash-financed deals) and 7,432 candidate control sample deals (firm performance and characteristics in firm-years). The estimated coefficients from this logit regression are used to estimate the probabilities of share- and cash-financed observations for each firm-year in the sample. The propensity scores (probabilities) are then used to perform a nearest-neighbour match. The matching is done with replacements using a standard tolerance (0.005 caliper matching[6]) and allowing for up to five unique matches per share- and cash-financed observation. Consequently, I obtain matched samples of 1,770 firm-year observations with 295 M&A deal observations and 1,475 in the firm performance control sample and 1,475 in the firm characteristics control sample.

Table 3-15 presents the two samples t-test of earnings management for the share- and cash-financed sample, the ROA matched sample and the basic characteristics matched sample in the three years prior to the merger announcement. Panel A show the difference in mean earnings management of the share- and cash-financed sample and the ROA matched sample. The difference in mean Benford's Law proxies ($\mathrm{FSD\_SCORE}_{i,t-1}$(0.017) and

[6] Cochran and Rubin (1973) introduce caliper matching, which is a modification of the nearest-neighbour matching procedure. Caliper matching entails an imposed tolerance on the difference between the treatment and control samples. Control observations that do not match the treatment observations based on standard caliper matching are excluded from the nearest-neighbour matching procedure.

$KSMAX_{i,t-1}$(0.049), the difference in mean accrual-based earnings management ($ATA\_JM_{i,t-1}$(0.046), $AWCA\_JM_{i,t-1}$(0.057), $ATA\_MJM_{i,t-1}$(0.037) and $AWCA\_MJM_{i,t-1}$(0.047)) and the difference in mean real earnings management ($ACF_{i,t-1}$(0.018), $ADEXP_{i,t-1}$(-0.015), $APROD_{i,t-1}$(-0.016) and $ATREM_{i,t-1}$(0.023)) of share-financed acquirers are positive and significant in year *t*-1 (the exceptions being $ADEXP_{i,t-1}$, $APROD_{i,t-1}$ and $ATREM_{i,t-1}$), while the differences between the mean earnings management proxies of share-financed acquirers under ROA matching in years *t*-2 and *t*-3 and those of cash-financed acquirers under ROA matching in years *t*-1, *t*-2 and *t*-3 are mixed and insignificant.

Panel B shows the differences in the mean earnings management of the share- and cash-financed sample and the characteristics matched sample. The differences in mean Benford's Law proxies ($FSD\_SCORE_{i,t-1}$(0.045) and $KSMAX_{i,t-1}$(0.081), the difference in mean accrual-based earnings management ($ATA\_JM_{i,t-1}$(0.042), $AWCA\_JM_{i,t-1}$(0.042), $ATA\_MJM_{i,t-1}$(0.037) and $AWCA\_MJM_{i,t-1}$(0.036)) and the difference in mean real earnings management ($ACF_{i,t-1}$(0.037), $ADEXP_{i,t-1}$(0.087), $APROD_{i,t-1}$(0.093) and $ATREM_{i,t-1}$(0.191)) of share-financed acquirers are positive and significant in year *t*-1 (the exceptions are $AWCA\_MJM_{i,t-1}$, $ADEXP_{i,t-1}$ and $APROD_{i,t-1}$. Similar to Panel A, the differences between the mean earnings management proxies of share-financed acquirers and the characteristics matched sample in years *t*-2 and *t*-3 and those between cash-financed acquirers and the characteristics matched sample in years *t*-1, *t*-2 and *t*-3 are mixed and insignificant.

The results in Panel A and B of Table 3-15 show that share-financed acquirers manipulate their earnings using accrual earnings management, and real earnings management, in particular engaging in cash flow real earnings management, in the first year prior to the merger announcement, while cash-financed acquirers do not manipulate their earnings prior to the merger announcement. These results are consistent with the hypotheses of this chapter.

Table 3-15: T-test of earnings management for matched samples

The differences in mean of earnings management proxies	Share-financed acquirers				Cash-financed acquirers		
	Year *t*-3	Year *t*-2	Year *t*-1		Year *t*-3	Year *t*-2	Year *t*-1
Panel A: Matching on the firm performance (ROA)							
$FSD\_SCORE_{i,t-1-k}$	0.007	0.015	0.017	***	0.004	0.008	0.008
$KSMAX_{i,t-1-k}$	0.019	0.032	0.049	***	0.009	0.016	0.019
$ATA\_JM_{i,t-1-k}$	0.021	-0.005	0.046	*	0.004	0.000	0.014
$AWCA\_JM_{i,t-1-k}$	0.022	0.003	0.057	**	0.002	-0.002	0.013
$ATA\_MJM_{i,t-1-k}$	0.020	-0.005	0.037		0.003	0.002	0.015
$AWCA\_MJM_{i,t-1-k}$	0.019	0.003	0.047	*	0.000	0.000	0.015
$ACF_{i,t-1-k}$	0.068	-0.048	0.018	*	-0.032	-0.056	-0.018
$ADEXP_{i,t-1-k}$	0.072	-0.064	-0.015		-0.013	0.018	-0.004
$APROD_{i,t-1-k}$	-0.062	-0.095	-0.016		-0.037	0.041	0.012
$ATREM_{i,t-1-k}$	-0.001	-0.094	0.023		-0.094	-0.020	-0.011
Panel B: Matching on the basic characteristic (SIZE, LEV & MTB)							
$FSD\_SCORE_{i,t-1-k}$	0.043	0.041	0.045	**	0.020	0.017	0.016
$KSMAX_{i,t-1-k}$	0.070	0.069	0.081	***	0.050	0.040	0.039
$ATA\_JM_{i,t-1-k}$	-0.014	0.018	0.042	*	0.014	-0.012	0.013
$AWCA\_JM_{i,t-1-k}$	-0.004	0.024	0.042	*	0.011	-0.018	0.009
$ATA\_MJM_{i,t-1-k}$	-0.026	0.012	0.037	*	0.014	-0.007	0.016
$AWCA\_MJM_{i,t-1-k}$	-0.017	0.017	0.036		0.010	-0.012	0.013
$ACF_{i,t-1-k}$	0.049	0.002	0.037	*	0.005	-0.046	-0.018
$ADEXP_{i,t-1-k}$	0.003	-0.072	0.087		-0.035	0.030	-0.013
$APROD_{i,t-1-k}$	0.072	-0.033	0.093		-0.045	-0.018	-0.032
$ATREM_{i,t-1-k}$	0.105	0.002	0.191	**	-0.094	-0.033	-0.043

Table 3-15: T-test of earnings management for matched samples

The differences in mean of earnings management proxies	Share-financed acquirers			Cash-financed acquirers		
	Year *t*-3	Year *t*-2	Year *t*-1	Year *t*-3	Year *t*-2	Year *t*-1

Note: The table reports the differences in mean earnings management and Benford's Law using propensity score matching. Matched samples consist of 1,770 firm-year observations with 295 share- and cash-financed deal observations and 1,475 in the firm performance (ROA) control sample or 1,475 in the firm characteristics control sample. Earnings management and Benford's Law variables are described in the Appendix. k is replaced by 0, 1 and 2 for the difference in mean of earnings management and Benford's Law of share- and cash-financed acquirer with matching samples in years *t*-1, *t*-2 and *t*-3 respectively. Years *t*-1, *t*-2 and *t*-3 are the first, second and the third years with an earnings release preceding the announcement of the deal. Significance is based on t-tests for the differences in mean. ***, ** and * indicate the 1%, 5% and 10% level of significance respectively.

3.6 ROBUSTNESS CHECKS

3.6.1 The Jones model without intercept

Kothari et al. (2005) show that the inclusion of an intercept in the Jones and modified Jones models enhances the specification of these traditional accruals models and improves the power of the test. They show that if these models include no intercept, the rejection rates will be 20% more than those models included an intercept. Kothari et al. (2005) suggest that an intercept can help avoid asymmetry around zero discretionary accruals. Following Kothari et al. (2005), this thesis estimates non-discretionary accruals using the Jones and modified Jones models with the intercept and without the intercept for robustness tests to assure the findings. The accrual-based earnings of acquirers estimated using the Jones and modified Jones models with the intercept are presented in Sections 3.5.3. This section analysis the accrual-based earnings of acquirers estimated using the Jones and modified Jones models without the intercept.

Table 3-16 and Table 3-17 present the coefficients of $\mathrm{SMA}_{\mathrm{i,t}}$ and $\mathrm{CMA}_{\mathrm{i,t}}$ estimated by Equation 3-10, replacing the dependence variable ($\mathrm{Y}_{\mathrm{i,t-1-k}}$) with $\mathrm{ATA\_JM}_{\mathrm{i,t-1-k}}$, $\mathrm{AWCA\_JM}_{\mathrm{i,t-1-k}}$, $\mathrm{ATA\_MJM}_{\mathrm{i,t-1-k}}$, and $\mathrm{AWCA\_MJM}_{\mathrm{i,t-1-k}}$ to detect accrual-based earnings management of acquirers prior to the merger announcement. These abnormal total accruals and working capital accruals are estimated using the Jones and modified Jones models without the intercept. As reported in Table 3-16 and Table 3-17, the results for the earnings management of share- and cash-financed acquirers prior to the merger announcement do not qualitatively change when abnormal accrual are estimated by the Jones and modified Jones models without the intercept.

Table 3-16: Abnormal total accruals and working capital accruals estimated by the Jones model without the intercept of share- and cash-financed acquirers

	ATA_JM						AWCA_JM					
	Year *t-3*		Year *t-2*		Year *t-1*		Year *t-3*		Year *t-2*		Year *t-1*	
Intercept	0.121	***	0.106	***	0.115	***	0.129	***	0.117	***	0.127	***
t-statistic	*12.11*		*11.25*		*12.76*		*11.88*		*11.28*		*12.8*	
$SMA_{i,t}$	0.015		0.012		0.032	**	0.016		0.010		0.029	*
t-statistic	*0.88*		*0.75*		*2.03*		*0.85*		*0.56*		*1.71*	
$CMA_{i,t}$	-0.004		-0.012		-0.005		-0.007		-0.013		-0.007	
t-statistic	*-0.43*		*-1.4*		*-0.67*		*-0.69*		*-1.4*		*-0.85*	
$MTB_{i,t-2-k}$	0.000		0.001	***	0.001	**	0.000		0.001	**	0.001	*
t-statistic	*0.78*		*2.62*		*2.57*		*0.65*		*2.31*		*1.85*	
$SIZE_{i,t-2-k}$	-0.006	***	-0.005	***	-0.006	***	-0.007	***	-0.006	***	-0.006	***
t-statistic	*-10.49*		*-9.32*		*-10.7*		*-10.11*		*-9.39*		*-10.64*	
$ROA_{i,t-1-k}$	0.175	***	0.169	***	0.171	***	0.183	***	0.177	***	0.178	***
t-statistic	*33.45*		*34.43*		*37.87*		*32.01*		*32.74*		*35.84*	
$LEV_{i,t-2-k}$	0.039	***	0.020	**	0.021	***	0.031	***	0.018	**	0.017	**
t-statistic	*4.96*		*2.56*		*2.79*		*3.68*		*2.06*		*2.09*	
$NOA_{i,t-2-k}$	-0.053	***	-0.050	***	-0.054	***	-0.056	***	-0.054	***	-0.058	***
t-statistic	*-8.6*		*-8.4*		*-9.45*		*-8.26*		*-8.22*		*-9.22*	
$SEO_{i,t-1-k}$	-0.003		-0.005		0.000		-0.008	*	-0.009	**	-0.005	
t-statistic	*-0.91*		*-1.5*		*-0.07*		*-1.89*		*-2.33*		*-1.32*	
$Year\ Fixed\ Effects$	*yes*		*yes*		*yes*		*yes*		*Yes*		*yes*	
$Industry\ Fixed\ Effects$	*yes*		*yes*		*yes*		*yes*		*Yes*		*yes*	
Adjusted. R^2	*0.1401*		*0.1416*		*0.1606*		*0.1305*		*0.1307*		*0.1473*	

Note: This table reports the results of OLS regression over the period from 2007 to 2012. The total sample has 7,727 observations, including 295 deals consisting of 62 share-financed deals and 233 cash-financed deals. The regression is as follows:

$Y_{i,t-1-k} = \alpha + \beta_1(SMA_{i,t}) + \beta_2(CMA_{i,t}) + \beta_3(MTB_{i,t-2-k}) + \beta_4(SIZE_{i,t-2-k}) + \beta_5(ROA_{i,t-1-k}) + \beta_6(LEV_{i,t-2-k}) + \beta_7(NOA_{i,t-2-k}) + \beta_8(SEO_{i,t-1-k}) + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t-1-k}$ (Equation 3-10)

$Y_{i,t-1-k}$ is replaced with $ATA\_JM_{i,t-1-k}$, and $AWCA\_JM_{i,t-1-k}$. *k* is replaced by 0, 1 and 2 to investigate the accruals earnings of share- and cash-financed acquirers in years *t*-1, *t*-2 and *t*-3. The independent variables are defined in the Appendix.

Table 3-17: Abnormal total accruals and working capital accruals estimated by the modified Jones model without the intercept of share- and cash-financed acquirers

	ATA_MJM						AWCA_MJM					
	Year *t*-3		Year *t*-2		Year *t*-1		Year *t*-3		Year *t*-2		Year *t*-1	
Intercept	0.120	***	0.106	***	0.114	***	0.127	***	0.115	***	0.125	***
t-statistic	*11.99*		*11.24*		*12.77*		*11.72*		*11.17*		*12.72*	
$SMA_{i,t}$	0.020		0.009		0.025	*	0.020		0.005		0.023	
t-statistic	*1.16*		*0.53*		*1.62*		*1.07*		*0.3*		*1.35*	
$CMA_{i,t}$	-0.004		-0.010		-0.004		-0.007		-0.011		-0.005	
t-statistic	*-0.49*		*-1.18*		*-0.47*		*-0.76*		*-1.17*		*-0.61*	
$MTB_{i,t-2-k}$	0.000		0.001	***	0.001	***	0.000		0.001	**	0.001	*
t-statistic	*0.77*		*2.93*		*2.75*		*0.58*		*2.52*		*1.85*	
$SIZE_{i,t-2-k}$	-0.006	***	-0.005	***	-0.006	***	-0.007	***	-0.006	***	-0.006	***
t-statistic	*-10.5*		*-9.5*		*-10.77*		*-10.06*		*-9.45*		*-10.62*	
$ROA_{i,t-1-k}$	0.184	***	0.178	***	0.178	***	0.188	***	0.184	***	0.183	***
t-statistic	*34.99*		*36.26*		*39.9*		*32.94*		*34.16*		*37.2*	
$LEV_{i,t-2-k}$	0.036	***	0.019	**	0.021	***	0.029	***	0.016	*	0.018	**
t-statistic	*4.58*		*2.42*		*2.81*		*3.37*		*1.88*		*2.15*	
$NOA_{i,t-2-k}$	-0.051	***	-0.050	***	-0.054	***	-0.053	***	-0.052	***	-0.057	***
t-statistic	*-8.31*		*-8.4*		*-9.45*		*-7.88*		*-8.04*		*-9.17*	
$SEO_{i,t-1-k}$	0.001		-0.001		0.002		-0.005		-0.005		-0.003	
t-statistic	*0.15*		*-0.4*		*0.71*		*-1.14*		*-1.45*		*-0.76*	
$Year\ Fixed\ Effects$	*yes*		*Yes*		*yes*		*yes*		*Yes*		*yes*	
$Industry\ Fixed\ Effects$	*yes*		*Yes*		*yes*		*yes*		*Yes*		*yes*	
Adjusted. R^2	*0.1502*		*0.1537*		*0.1745*		*0.1363*		*0.1395*		*0.1563*	

Note: This table reports the results of OLS regression over the period from 2007 to 2012. The total sample has 7,727 observations, including 295 deals consisting of 62 share-financed deals and 233 cash-financed deals. The regression is as follows:

$Y_{i,t-1-k} = \alpha + \beta_1(SMA_{i,t}) + \beta_2(CMA_{i,t}) + \beta_3(MTB_{i,t-2-k}) + \beta_4(SIZE_{i,t-2-k}) + \beta_5(ROA_{i,t-1-k}) + \beta_6(LEV_{i,t-2-k}) + \beta_7(NOA_{i,t-2-k}) + \beta_8(SEO_{i,t-1-k}) + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t-1-k}$ (Equation 3-10)

$Y_{i,t-1-k}$ is replaced with $ATA\_MJM_{i,t-1-k}$, and $AWCA\_MJM_{i,t-1-k}$. *k* is replaced by 0, 1 and 2 to investigate the accruals earnings of share- and cash-financed acquirers in years *t*-1, *t*-2 and *t*-3. The independent variables are defined in the Appendix.

Table 3-18 and Table 3-19 present the coefficients of $\mathrm{SMA\_CMA}_{i,t}$ estimated by Equation 3-12, with the dependence variable ($Y_{i,t-1-k}$) replaced by $\mathrm{ATA\_JM}_{i,t-1-k}$, $\mathrm{AWCA\_JM}_{i,t-1-k}$, $\mathrm{ATA\_MJM}_{i,t-1-k}$, and $\mathrm{AWCA\_MJM}_{i,t-1-k}$ to test whether the accrual-based earnings management of share-financed acquirers is higher than that of cash-financed acquirers prior to the merger announcement. These abnormal total accruals and working capital accruals are estimated using the Jones and modified Jones models without the intercept. The results shown in Table 3-18 and Table 3-19 indicate that the main results are qualitatively unchanged.

Table 3-18: Abnormal total accruals and working capital accruals estimated by the Jones model without the intercept of share-financed acquirers versus cash-financed acquirers

	ATA_JM						AWCA_JM					
	Year *t*-3		Year *t*-2		Year *t*-1		Year *t*-3		Year *t*-2		Year *t*-1	
Intercept	0.084		-0.037		0.008		0.078		-0.049		0.012	
t-statistic	1.45		-0.66		0.13		1.23		-0.8		0.19	
$SMA\_CMA_{i,t}$	0.002		0.033		0.053	**	0.003		0.028		0.048	*
t-statistic	0.09		1.6		2.34		0.13		1.21		1.96	
$MTB_{i,t-2-k}$	0.003	**	0.002		0.000		0.004	**	0.003	*	-0.001	
t-statistic	2.3		1.25		-0.2		2.58		1.67		-0.35	
$SIZE_{i,t-2-k}$	-0.007	*	0.003		0.000		-0.008	*	0.003		0.000	
t-statistic	-1.78		0.7		-0.11		-1.77		0.85		-0.08	
$ROA_{i,t-1-k}$	0.143	***	0.147	***	0.178	***	0.143	***	0.132	***	0.167	***
t-statistic	4.31		5.8		5.25		3.99		4.73		4.55	
$LEV_{i,t-2-k}$	0.047		0.041		0.071		0.034		0.021		0.056	
t-statistic	1.04		0.89		1.35		0.7		0.41		0.98	
$NOA_{i,t-2-k}$	-0.011		-0.080	***	-0.036		0.002		-0.077	**	-0.039	
t-statistic	-0.38		-2.73		-1.17		0.05		-2.41		-1.16	
$SEO_{i,t-1-k}$	-0.010		-0.030	*	0.012		-0.016		-0.033	*	0.008	
t-statistic	-0.49		-1.78		0.62		-0.78		-1.78		0.39	
Year Fixed Effects	yes		yes		Yes		yes		Yes		yes	
Industry Fixed Effects	yes		yes		Yes		yes		Yes		yes	
Adjusted. R^2	0.1911		0.2681		0.0965		0.1957		0.2425		0.1073	

Note: This table reports the results of OLS regression over the period from 2007 to 2012. The total sample has 295 deals, including 62 share-financed deals and 233 cash-financed deals. The regression is as follows:

$Y_{i,t-1-k} = \alpha + \beta_1(SMA\_CMA_{i,t}) + \beta_2(MTB_{i,t-2-k}) + \beta_3(SIZE_{i,t-2-k}) + \beta_4(ROA_{i,t-1-k}) + \beta_5(LEV_{i,t-2-k}) + \beta_6(NOA_{i,t-2-k}) + \beta_7(SEO_{i,t-1-k}) + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t-1-k}$ (Equation 3-12)

$Y_{i,t-1-k}$ is replaced with $ATA\_JM_{i,t-1-k}$, and $AWCA\_JM_{i,t-1-k}$. *k* is replaced by 0, 1 and 2 to investigate the difference accruals earnings management of share- and cash-financed acquirers in years *t*-1, *t*-2 and *t*-3. The independent variables are defined in the Appendix.

Table 3-19: Abnormal total accruals and working capital accruals estimated by the modified Jones model without the intercept of share-financed acquirers versus cash-financed acquirers

	ATA_MJM			AWCA_MJM		
	Year *t*-3	Year *t*-2	Year *t*-1	Year *t*-3	Year *t*-2	Year *t*-1
Intercept	0.115 **	-0.055	0.029	0.102	-0.059	0.039
t-statistic	1.98	-0.95	0.5	1.62	-0.91	0.64
$SMA\_CMA_{i,t}$	0.008	0.030	0.042 *	0.009	0.022	0.038
t-statistic	0.34	1.36	1.91	0.36	0.93	1.59
$MTB_{i,t-2-k}$	0.003 **	0.003	-0.001	0.003 **	0.004 **	-0.001
t-statistic	2.23	1.64	-0.37	2.4	2.03	-0.64
$SIZE_{i,t-2-k}$	-0.008 **	0.003	-0.002	-0.008 *	0.004	-0.002
t-statistic	-2.08	0.86	-0.41	-1.95	0.91	-0.42
$ROA_{i,t-1-k}$	0.154 ***	0.154 ***	0.182 ***	0.148 ***	0.137 ***	0.171 ***
t-statistic	4.63	5.81	5.5	4.16	4.73	4.77
$LEV_{i,t-2-k}$	0.009	0.007	0.055	-0.007	-0.016	0.043
t-statistic	0.19	0.15	1.07	-0.15	-0.31	0.78
$NOA_{i,t-2-k}$	-0.016	-0.073 **	-0.027	-0.001	-0.066 **	-0.031
t-statistic	-0.52	-2.4	-0.88	-0.02	-1.99	-0.95
$SEO_{i,t-1-k}$	-0.006	-0.020	0.018	-0.013	-0.025	0.012
t-statistic	-0.32	-1.16	0.93	-0.62	-1.3	0.58
Year Fixed Effects	yes	yes	yes	yes	yes	yes
Industry Fixed Effects	yes	yes	yes	yes	yes	yes
Adjusted. R^2	0.2032	0.2379	0.1378	0.1933	0.2313	0.1322

Note: This table reports the results of OLS regression over the period from 2007 to 2012. The total sample has 295 deals, including 62 share-financed deals and 233 cash-financed deals. The regression is as follows:

$Y_{i,t-1-k} = \alpha + \beta_1(SMA\_CMA_{i,t}) + \beta_2(MTB_{i,t-2-k}) + \beta_3(SIZE_{i,t-2-k}) + \beta_4(ROA_{i,t-1-k}) + \beta_5(LEV_{i,t-2-k}) + \beta_6(NOA_{i,t-2-k}) + \beta_7(SEO_{i,t-1-k}) + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t-1-k}$ (Equation 3-12)

$Y_{i,t-1-k}$ is replaced with $ATA\_JM_{i,t-1-k}$, and $AWCA\_JM_{i,t-1-k}$. *k* is replaced by *0*, *1* and *2* to investigate the difference of accruals earnings management of share- and cash-financed acquirers in years *t*-1, *t*-2 and *t*-3. The independent variables are defined in the Appendix.

3.6.2 Control for performance

Kothari et al. (2005) provide evidence that operating performance is associated with measurement errors in estimating earnings management proxies. To control for the influence of performance on discretionary accruals, they add ROA to the traditional Jones models to capture abnormal accruals. Following Kothari et al. (2005), this study adds ROA as a regressor in the cross-sectional Jones (1991) and the modified Jones models to control for firm performance. Thus, in the robustness tests, to estimate abnormal accruals, first the following equation is estimated for each industry/year with at least six observations:

Equation 3-16

$$\frac{TA_{i,t}}{A_{i,t-1}} = \alpha + \beta_1(\frac{1}{A_{i,t-1}}) + \beta_2(\frac{\Delta REV_{i,t}}{A_{i,t-1}}) + \beta_3\,(\frac{PPE_{i,t}}{A_{i,t-1}}) + \beta_4 ROA_{i,t-1} + \varepsilon_{i,t}$$

Using coefficients $\hat{\alpha}, \hat{\beta}_1, \hat{\beta}_2, \hat{\beta}_3$ and $\hat{\beta}_4$ estimated from Equation 3-16, I compute the first proxy for earnings management as abnormal accruals following Jones (1991) based on the cash flow approach ($\mathrm{ATA}_{\mathrm{i,t}}$), as follows:

Equation 3-17

$$ATA\_JM\_PC_{i,t} = \frac{TA_{i,t}}{A_{i,t-1}} - [\hat{\alpha} + \hat{\beta}_1(\frac{1}{A_{i,t-1}}) + \hat{\beta}_2(\frac{\Delta REV_{i,t}}{A_{i,t-1}}) + \hat{\beta}_3\,(\frac{PPE_{i,t}}{A_{i,t-1}}) + \hat{\beta}_4 ROA_{i,t-1}]$$

Employing the modified version of the Jones model, the change in revenue ($\Delta\mathrm{REV}_{\mathrm{i,t}}$) is deducted from the change in accounts receivable ($\Delta\mathrm{REC}_{\mathrm{i,t}}$) in the second stage. Therefore, using coefficients $\hat{\alpha}, \hat{\beta}_1, \hat{\beta}_2, \hat{\beta}_3$ and $\hat{\beta}_4$ estimated from Equation 3-16, abnormal accruals using the modified-Jones model based on the cash flow approach ($\mathrm{ATA\_MJM\_PC}_{\mathrm{i,t}}$) are calculated as follows:

Equation 3-18

$$ATA\_MJM\_PC_{i,t}$$
$$= \frac{TA_{i,t}}{A_{i,t-1}} - [\hat{\alpha} + \hat{\beta}_1(\frac{1}{A_{i,t-1}}) + \hat{\beta}_2(\frac{\Delta REV_{i,t} - \Delta REC_{i,t}}{A_{i,t-1}}) + \hat{\beta}_3\ (\frac{PPE_{i,t}}{A_{i,t-1}})$$
$$+ \hat{\beta}_4 ROA_{i,t-1}]$$

Using the approach controlling for performance, I also calculate working capital accruals to avoid the effect of long-term accruals. Thus, other measures of earnings management are abnormal working capital accruals ($\mathrm{AWCA\_JM\_PC_{i,t}}$) following the Jones model and abnormal working capital accruals following the modified Jones model ($\mathrm{AWCA\_MJM\_PC_{i,t}}$).

I then run a regression that excludes the ROA control variables to investigate whether share-financed acquirers and cash-financed acquirers inflate accruals prior to a merger announcement, because the ROA variable is included in the Jones and modified Jones models in the performance-controlled approach. The regression is as follows:

Equation 3-19

$$Y_{i,t-1-k} = \alpha + \beta_1(SMA_{i,t}) + \beta_2(CMA_{i,t}) + \beta_3(MTB_{i,t-2-k}) + \beta_4(SIZE_{i,t-2-k})$$
$$+ \beta_5(LEV_{i,t-2-k}) + \beta_6(NOA_{i,t-2-k}) + \beta_7(SEO_{i,t-1-k})$$
$$+ Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t-1-k}$$

For abnormal total accruals and working capital accruals are estimated using the Jones and modified Jones models with the intercept based on the performance control approach, Table 3-20 and Table 3-21 present the coefficients of $\mathrm{SMA_{i,t}}$ and $\mathrm{CMA_{i,t}}$ estimated by Equation 3-19, with the dependent variables ($\mathrm{Y_{i,t-1-k}}$) replaced by $\mathrm{ATA\_JM\_PC_{i,t-1-k}}$, $\mathrm{AWCA\_JM\_PC_{i,t-1-k}}$, $\mathrm{ATA\_MJM\_PC_{i,t}}$, and

$\mathrm{AWCA\_MJM\_PC}_{i,t}$. Table 3-20 and Table 3-21 show that the results of the accrual-based earnings management estimated by the traditional Jones models with the intercept of share- and cash-financed acquirers prior to the merger announcement do not qualitatively change under the controlled performance appproach.

Table 3-20: Abnormal total accruals and working capital accruals estimated by the Jones model with the intercept based on the performance control approach of share- and cash-financed acquirers

	ATA_JM_PC						AWCA_JM_PC					
	Year *t*-3		Year *t*-2		Year *t*-1		Year *t*-3		Year *t*-2		Year *t*-1	
Intercept	0.034	***	0.029	***	0.048	***	0.040	***	0.037	***	0.057	***
t-statistic	3.78		3.48		6.04		3.98		3.97		6.34	
$SMA_{i,t}$	0.001		0.013		0.031	**	-0.001		0.011		0.032	**
t-statistic	0.05		0.86		2.21		-0.07		0.63		1.97	
$CMA_{i,t}$	0.000		-0.005		0.003		-0.002		-0.007		0.001	
t-statistic	-0.04		-0.58		0.36		-0.26		-0.78		0.1	
$MTB_{i,t-2-k}$	-0.001	*	0.000		0.000		-0.001		0.000		0.000	
t-statistic	-1.75		0.01		0.16		-1.58		-0.34		-0.44	
$SIZE_{i,t-2-k}$	-0.004	***	-0.003	***	-0.003	***	-0.004	***	-0.003	***	-0.004	***
t-statistic	-6.41		-5.06		-5.84		-7.04		-5.98		-6.67	
$LEV_{i,t-2-k}$	0.040	***	0.028	***	0.024	***	0.042	***	0.030	***	0.027	***
t-statistic	5.48		3.89		3.46		5.11		3.77		3.42	
$NOA_{i,t-2-k}$	-0.025	***	-0.023	***	-0.025	***	-0.026	***	-0.024	***	-0.028	***
t-statistic	-4.42		-4.21		-4.85		-4.01		-3.95		-4.79	
$SEO_{i,t-1-k}$	-0.003		-0.001		0.003		-0.006		-0.003		0.001	
t-statistic	-1.01		-0.39		0.98		-1.51		-0.87		0.22	
Year Fixed Effects	yes		Yes		yes		yes		yes		yes	
Industry Fixed Effects	yes		Yes		yes		yes		yes		yes	
Adjusted. R^2	0.0157		0.0125		0.017		0.0216		0.0205		0.0267	

Note: This table reports the results of OLS regression over the period from 2007 to 2012. The total sample has 7,727 observations, including 295 deals which consist of 62 share-financed deals and 233 cash-financed deals. The regression is as follows:

$Y_{i,t-1-k} = \alpha + \beta_1(SMA_{i,t}) + \beta_2(CMA_{i,t}) + \beta_3(MTB_{i,t-2-k}) + \beta_4(SIZE_{i,t-2-k}) + \beta_5(LEV_{i,t-2-k}) + \beta_6(NOA_{i,t-2-k}) + \beta_7(SEO_{i,t-1-k}) + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t-1-k}$ (Equation 3-19)

$Y_{i,t-1-k}$ is replaced with $ATA\_JM\_PC_{i,t-1-k}$, and $AWCA\_JM\_PC_{i,t-1-k}$. *k* is replaced by 0, 1 and 2 to investigate the accruals earnings management of share- and cash-financed acquirers in years *t*-1, *t*-2 and *t*-3. The independent variables are defined in the Appendix.

Table 3-21: Abnormal total accruals and working capital accruals estimated by the Jones model with the intercept based on the performance control approach of share- and cash-financed acquirers

	ATA_MJM_PC						AWCA_MJM_PC					
	Year *t*-3		Year *t*-2		Year *t*-1		Year *t*-3		Year *t*-2		Year *t*-1	
Intercept	0.036	***	0.030	***	0.038	***	0.042	***	0.037	***	0.045	***
t-statistic	4.2		3.71		4.91		4.36		4.09		5.21	
$\mathrm{SMA}_{i,t}$	0.006		0.009		0.030	**	0.007		0.008		0.029	*
t-statistic	0.38		0.63		2.14		0.39		0.51		1.88	
$\mathrm{CMA}_{i,t}$	-0.002		-0.005		0.003		-0.005		-0.007		0.002	
t-statistic	-0.18		-0.66		0.36		-0.5		-0.78		0.21	
$\mathrm{MTB}_{i,t-2-k}$	-0.001	*	0.000		0.000		-0.001	*	0.000		0.000	
t-statistic	-1.77		0.06		0.29		-1.88		-0.42		-0.47	
$\mathrm{SIZE}_{i,t-2-k}$	-0.003	***	-0.002	***	-0.002	***	-0.003	***	-0.002	***	-0.002	***
t-statistic	-5.08		-3.68		-4.56		-5.07		-4.06		-4.78	
$\mathrm{LEV}_{i,t-2-k}$	0.031	***	0.017	**	0.013	*	0.025	***	0.015	*	0.010	
t-statistic	4.35		2.42		1.94		3.19		1.88		1.37	
$\mathrm{NOA}_{i,t-2-k}$	-0.025	***	-0.021	***	-0.022	***	-0.025	***	-0.022	***	-0.023	***
t-statistic	-4.43		-3.95		-4.32		-4.13		-3.71		-4.13	
$\mathrm{SEO}_{i,t-1-k}$	-0.005		-0.002		0.002		-0.009	**	-0.006	*	-0.001	
t-statistic	-1.59		-0.8		0.7		-2.42		-1.66		-0.34	
Year Fixed Effects	yes		yes		yes		yes		yes		yes	
Industry Fixed Effects	yes		yes		yes		yes		yes		yes	
Adjusted. R^2	0.041		0.019		0.02		0.036		0.017		0.03	

Note: This table reports the results of OLS regression over the period from 2007 to 2012. The total sample has 7,727 observations, including 295 deals which consist of 62 share-financed deals and 233 cash-financed deals. The regression is as follows:

$Y_{i,t-1-k} = \alpha + \beta_1(SMA_{i,t}) + \beta_2(CMA_{i,t}) + \beta_3(MTB_{i,t-2-k}) + \beta_4(SIZE_{i,t-2-k}) + \beta_5(LEV_{i,t-2-k}) + \beta_6(NOA_{i,t-2-k}) + \beta_7(SEO_{i,t-1-k}) + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t-1-k}$ (Equation 3-19)

$\mathrm{Y}_{i,t-1-k}$ is replaced with $\mathrm{ATA\_JM\_PC}_{i,t-1-k}$, and $\mathrm{AWCA\_JM\_PC}_{i,t-1-k}$. *k* is replaced by 0, 1 and 2 to investigate the accruals earnings management of share- and cash-financed acquirers in years *t*-1, *t*-2 and *t*-3. The independent variables are defined in the Appendix.

For abnormal total accruals and working capital accruals are estimated by the Jones and modified Jones models without the intercept based on the performance control approach, Table 3-22 and Table 3-23 present the coefficients of $\mathrm{SMA_{i,t}}$ and $\mathrm{CMA_{i,t}}$ estimated by Equation 3-19, with the dependent variables ($\mathrm{Y_{i,t-1-k}}$) replaced by $\mathrm{ATA\_JM_{i,t-1-k}}$, $\mathrm{AWCA\_JM_{i,t-1-k}}$, $\mathrm{ATA\_MJM_{i,t}}$, and $\mathrm{AWCA\_MJM_{i,t}}$. The results show that the results of the accrual-based earnings management estimated by the traditional Jones models without the intercept of share- and cash-financed acquirers prior to the merger announcement remain qualitatively unchanged under the performance control appproach.

Table 3-22: Abnormal total accruals and working capital accruals estimated by the modified Jones model without the intercept based on the performance control approach of share- and cash-financed acquirers

	ATA_JM						AWCA_JM					
	Year *t*-3		Year *t*-2		Year *t*-1		Year *t*-3		Year *t*-2		Year *t*-1	
Intercept	0.032	***	0.026	***	0.045	***	0.036	***	0.033	***	0.053	***
t-statistic	3.5		3.06		5.68		3.63		3.55		6.06	
$SMA_{i,t}$	-0.001		0.010		0.026	*	-0.005		0.006		0.026	*
t-statistic	-0.08		0.62		1.85		-0.25		0.37		1.66	
$CMA_{i,t}$	0.000		-0.002		0.003		-0.003		-0.004		0.001	
t-statistic	-0.05		-0.29		0.44		-0.29		-0.48		0.17	
$MTB_{i,t-2-k}$	-0.001	**	0.000		0.000		-0.001	**	0.000		0.000	
t-statistic	-1.99		0.09		0.42		-1.98		-0.29		-0.37	
$SIZE_{i,t-2-k}$	-0.003	***	-0.002	***	-0.003	***	-0.004	***	-0.003	***	-0.003	***
t-statistic	-6.02		-4.77		-5.65		-6.56		-5.67		-6.54	
$LEV_{i,t-2-k}$	0.038	***	0.028	***	0.024	***	0.039	***	0.031	***	0.028	***
t-statistic	5.1		3.84		3.5		4.71		3.81		3.6	
$NOA_{i,t-2-k}$	-0.026	***	-0.025	***	-0.026	***	-0.025	***	-0.026	***	-0.029	***
t-statistic	-4.54		-4.51		-4.97		-3.96		-4.28		-5.04	
$SEO_{i,t-1-k}$	-0.002		0.001		0.004		-0.005		-0.002		0.001	
t-statistic	-0.52		0.23		1.26		-1.38		-0.49		0.29	
Year Fixed Effects	yes		Yes		yes		yes		yes		yes	
Industry Fixed Effects	yes		Yes		yes		yes		yes		yes	
Adjusted. R^2	0.0134		0.0111		0.0162		0.0184		0.0184		0.026	

Note: This table reports the results of OLS regression over the period from 2007 to 2012. The total sample has 7,727 observations, including 295 deals which consist of 62 share-financed deals and 233 cash-financed deals. The regression is as follows:

$Y_{i,t-1-k} = \alpha + \beta_1(SMA_{i,t}) + \beta_2(CMA_{i,t}) + \beta_3(MTB_{i,t-2-k}) + \beta_4(SIZE_{i,t-2-k}) + \beta_5(LEV_{i,t-2-k}) + \beta_6(NOA_{i,t-2-k}) + \beta_7(SEO_{i,t-1-k}) + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t-1-k}$ (Equation 3-19)

$Y_{i,t-1-k}$ is replaced with $ATA\_MJM\_PC_{i,t-1-k}$, and $AWCA\_MJM\_PC_{i,t-1-k}$. *k* is replaced by 0, 1 and 2 to investigate the accruals earnings management of share- and cash-financed acquirers in years *t*-1, *t*-2 and *t*-3. The independent variables are defined in the Appendix.

Table 3-23: Abnormal total accruals and working capital accruals estimated by the modified Jones model without the intercept based on the performance control approach of share- and cash-financed acquirers

	ATA_MJM_PC						AWCA_MJM_PC					
	Year *t*-3		Year *t*-2		Year *t*-1		Year *t*-3		Year *t*-2		Year *t*-1	
Intercept	0.035	***	0.028	***	0.035	***	0.039	***	0.035	***	0.043	***
t-statistic	4		3.4		4.6		4.02		3.9		4.99	
$SMA_{i,t}$	0.008		0.005		0.025	*	0.008		0.003		0.025	
t-statistic	0.47		0.35		1.83		0.44		0.2		1.62	
$CMA_{i,t}$	-0.002		-0.002		0.003		-0.005		-0.004		0.002	
t-statistic	-0.21		-0.31		0.42		-0.55		-0.42		0.28	
$MTB_{i,t-2-k}$	-0.001	*	0.000		0.000		-0.001	**	0.000		0.000	
t-statistic	-1.9		0.32		0.5		-2.13		-0.19		-0.44	
$SIZE_{i,t-2-k}$	-0.003	***	-0.002	***	-0.002	***	-0.003	***	-0.002	***	-0.002	***
t-statistic	-4.96		-3.58		-4.38		-4.82		-4.05		-4.67	
$LEV_{i,t-2-k}$	0.029	***	0.017	**	0.013	**	0.022	***	0.015	*	0.011	
t-statistic	3.97		2.35		2		2.79		1.94		1.51	
$NOA_{i,t-2-k}$	-0.025	***	-0.021	***	-0.022	***	-0.024	***	-0.022	***	-0.024	***
t-statistic	-4.37		-3.85		-4.28		-3.83		-3.77		-4.2	
$SEO_{i,t-1-k}$	-0.003		-0.001		0.003		-0.008	**	-0.004		-0.001	
t-statistic	-1		-0.21		0.95		-2.16		-1.16		-0.26	
Year Fixed Effects	Yes		Yes		yes		yes		yes		yes	
Industry Fixed Effects	Yes		Yes		yes		yes		yes		yes	
Adjusted. R^2	0.036		0.023		0.03		0.028		0.019		0.06	

Note: This table reports the results of OLS regression over the period from 2007 to 2012. The total sample has 7,727 observations, including 295 deals which consist of 62 share-financed deals and 233 cash-financed deals. The regression is as follows:

$Y_{i,t-1-k} = \alpha + \beta_1(SMA_{i,t}) + \beta_2(CMA_{i,t}) + \beta_3(MTB_{i,t-2-k}) + \beta_4(SIZE_{i,t-2-k}) + \beta_5(LEV_{i,t-2-k}) + \beta_6(NOA_{i,t-2-k}) + \beta_7(SEO_{i,t-1-k}) + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t-1-k}$ (Equation 3-19)

$Y_{i,t-1-k}$ is replaced with $ATA\_MJM\_PC_{i,t-1-k}$, and $AWCA\_MJM\_PC_{i,t-1-k}$. *k* is replaced by 0, 1 and 2 to investigate the accruals earnings management of share- and cash-financed acquirers in years *t*-1, *t*-2 and *t*-3. The independent variables are defined in the Appendix.

Similar to controlling the performance with regard to measuring accrual-based earnings management, following Kothari et al. (2005), this study adds ROA as a regressor in the real earnings management models. Thus, the following equations are estimated for each industry/year with at least six observations:

Equation 3-20

$$\frac{CF\_PC_{it}}{A_{it-1}} = \alpha_0 + \beta_1 \frac{1}{A_{t-1}} + \beta_2 \frac{REV_{it}}{A_{it-1}} + \beta_3 \frac{\Delta REV_{it}}{A_{it-1}} + \beta_4 ROA_{i,t-1} + \varepsilon_{it}$$

Equation 3-21

$$\frac{DISEXP\_PC_{it}}{A_{it-1}} = \alpha_0 + \beta_1 \frac{1}{A_{it-1}} + \beta_2 \frac{REV_{it-1}}{A_{it-1}} + \beta_3 ROA_{i,t-1} + \varepsilon_{it}$$

Equation 3-22

$$\frac{PROD\_PC_{it}}{A_{it-1}} = \alpha_0 + \beta_1 \frac{1}{A_{it-1}} + \beta_2 \frac{REV_{it}}{A_{it-1}} + \beta_3 \frac{\Delta REV_{it}}{A_{it-1}} + \beta_4 \frac{\Delta REV_{it-1}}{A_{it-1}} + \beta_5 ROA_{i,t-1} + \varepsilon_{it}$$

For every firm-year, abnormal CF controlling for performance (ACF_PC) is the actual CF minus the normal CF_PC calculated using the estimated coefficients from Equation 3-20, multiplied by -1. Abnormal DISEXP controlling for performance controlling (ADEXP_PC) is the actual DISEXP minus the normal DISEXP_PC calculated using the estimated coefficients form Equation 3-21, multiplied by -1. Abnormal PROD controlling for performance (APROD_PC) is the actual PROD minus the normal PROD_PC calculated using the estimated coefficients from Equation 3-22. Finally, the abnormal total real earnings management controlling for performance (ATREM_PC) is the sum of ACF_PC, ADEXP_PC and APROD_PC.

I then run a regression to investigate whether share-financed acquirers and cash-financed acquirers inflate real earnings activities prior to a merger announcement, that excludes the ROA control variable, because this is included in the real earnings management models in the performance-controlled approach. The regression is as follows:

Equation 3-23

$$Y_{i,t-1-k} = \alpha + \beta_1\left(SMA_{i,t}\right) + \beta_2\left(CMA_{i,t}\right) + \beta_3(MTB_{i,t-2-k}) + \beta_4(SIZE_{i,t-2-k}) + \beta_5(LEV_{i,t-2-k}) + \beta_6(SEO_{i,t-1-k}) + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t-1-k}$$

Table 3-24 presents the real earnings management of share- and cash-financed acquirers prior to a merger announcement based on the performance-controlled approach. The coefficients of $\mathrm{SMA_{i,t}}$ and $\mathrm{CMA_{i,t}}$ estimated by Equation 3-19 are consistent with the main findings. Thus, the findings in Table 3-24 are qualitatively unchanged when I estimate real earnings management of share- and cash-financed acquirers based on the appproach controlling for performance.

Table 3-24: Abnormal real earnings management based on the performance control approach of share- and cash-financed acquirers versus the rest of the sample

	ACF_PC			ADEXP_PC			APROD_PC			ATREM_PC		
	Year *t*-3	Year *t*-2	Year *t*-1	Year *t*-3	Year *t*-2	Year *t*-1	Year *t*-3	Year *t*-2	Year *t*-1	Year *t*-3	Year *t*-2	Year *t*-1
Intercept	0.268 ***	0.207 ***	0.258 ***	-0.277 ***	-0.297 ***	-0.293 ***	0.042	0.027	0.059 ***	-0.014	-0.090 **	-0.025
t-statistic	***8.16***	***8.74***	***13.23***	***-5.78***	***-8.63***	***-10.23***	***1.29***	***0.91***	***2.76***	***-0.29***	***-2.53***	***-0.81***
$\mathrm{SMA}_{\mathrm{i,t}}$	-0.012	0.044	0.079 **	0.125	0.038	0.039	0.028	-0.064	0.018	0.053	0.090	0.154 ***
t-statistic	***-0.19***	***0.99***	***2.17***	***1.4***	***0.59***	***0.75***	***0.43***	***-1.17***	***0.45***	***0.59***	***1.37***	***2.77***
$\mathrm{CMA}_{\mathrm{i,t}}$	-0.020	-0.040	-0.045	-0.035	0.051	0.037	-0.008	0.002	-0.002	-0.080	-0.011	-0.009
t-statistic	***-0.62***	***-1.76***	***-2.43***	***-0.72***	***1.5***	***1.32***	***-0.25***	***0.07***	***-0.12***	***-1.68***	***-0.31***	***-0.31***
$\mathrm{MTB}_{\mathrm{i,t-2-k}}$	0.005 ***	0.003 ***	0.004 ***	-0.008 ***	-0.007 ***	-0.009 ***	-0.004 ***	-0.003 ***	-0.002 ***	-0.005 ***	-0.005 ***	-0.005 ***
t-statistic	***4.39***	***3.95***	***6.16***	***-4.75***	***-6.09***	***-9.34***	***-3.52***	***-2.89***	***-3.08***	***-3.26***	***-4.12***	***-4.85***
$\mathrm{SIZE}_{\mathrm{i,t-2-k}}$	-0.017 ***	-0.012 ***	-0.015 ***	0.007 **	0.010 ***	0.012 ***	0.004 *	0.000 ***	-0.004 ***	-0.007 **	-0.002 ***	-0.004 ***
t-statistic	***-8.32***	***-8***	***-12.42***	***2.46***	***4.78***	***7.16***	***1.75***	***0.22***	***-3.22***	***-2.52***	***-0.7***	***-2.4***
$\mathrm{LEV}_{\mathrm{i,t-2-k}}$	0.157 ***	0.075 ***	0.075 ***	0.025	0.042	0.074 ***	0.007	0.038	0.058 ***	0.116 ***	0.088 ***	0.140 ***
t-statistic	***5.68***	***3.6***	***4.27***	***0.62***	***1.4***	***2.94***	***0.26***	***1.47***	***3***	***2.94***	***2.84***	***5.18***
$\mathrm{SEO}_{\mathrm{i,t-1-k}}$	0.100 ***	0.073 ***	0.079 ***	-0.074 ***	-0.054 ***	-0.044 ***	0.032 **	0.030 ***	0.039 ***	0.022	0.016	0.033 ***
t-statistic	***7.73***	***7.9***	***10.3***	***-3.93***	***-4.12***	***-3.94***	***2.46***	***2.62***	***4.63***	***1.18***	***1.13***	***2.79***
$Year\ Fixed\ Effects$	***yes***	***yes***	***Yes***	***yes***	***yes***	***yes***	***yes***	***yes***	***yes***	***yes***	***yes***	***yes***
$Industry\ Fixed\ Effects$	***yes***	***yes***	***Yes***	***yes***	***yes***	***yes***	***yes***	***yes***	***yes***	***yes***	***yes***	***yes***
Adjusted. R^2	*0.049*	*0.0439*	*0.0741*	*0.0293*	*0.0367*	*0.0472*	*0.0149*	*0.0209*	*0.0179*	*0.0262*	*0.0109*	*0.0179*

Note: This table reports the results of OLS regression over the period from 2007 to 2012. The total sample has 7,727 observations, including 295 deals which consist of 62 share-financed deals and 233 cash-financed deals. The regression is as follows: $Y_{i,t-1-k} = \alpha + \beta_1(SMA_{i,t}) + \beta_2(CMA_{i,t}) + \beta_3(MTB_{i,t-2-k}) + \beta_4(SIZE_{i,t-2-k}) + \beta_5(LEV_{i,t-2-k}) + \beta_6(SEO_{i,t-1-k}) + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t-1-k}$ (Equation 3-23)

$\mathrm{Y}_{\mathrm{i,t-1-k}}$ is replaced with $\mathrm{ACF\_PC}_{\mathrm{i,t-1-k}}$, $\mathrm{ADEXP\_PC}_{\mathrm{i,t-1-k}}$, $\mathrm{APROD\_PC}_{\mathrm{i,t-1-k}}$ and $\mathrm{ATREM\_PC}_{\mathrm{i,t-1-k}}$ which are calculated by employing the approach controlling performance. *k* is replaced by 0, 1 and 2 to investigate the real earnings management of share- and cash-financed acquirers in years *t*-1, *t*-2 and *t*-3. The independent variables are defined in the Appendix.

3.7 SUMMARY

This chapter has investigated the earnings management of both share- and cash-financed acquirers prior to a merger announcement by estimating accrual-based earnings management, real earnings management and the first-digit deviation of acquirers' financial statement data based on Benford's Law. The analyses employed a sample 62 share-financed deals and 233 cash-financed deals in the period 2007 to 2012. To measure accrual-based earnings management, abnormal total accruals and working capital accruals were estimated using the Jones model and modified Jones model with and without the intercept under the cash flow approach. To measure real earnings management, following Roychowdhury (2006)'s real earnings management models, abnormal cash flow, abnormal expenses, abnormal production costs and abnormal total real earnings management were estimated. For share-financed M&A deals, the results show that acquirers exhibit higher deviations from Benford's Law prior to the merger announcement, suggesting that they engage in earnings management activities. There is also evidence that acquirers inflate both their accrual-based and real-based earnings prior to the merger announcement, which is consistent with previous research. Regarding cash-financed M&A deals, there is no evidence of earnings management by acquirers prior to the merger announcement across all earnings management proxies.

This chapter is the first to document whether acquirers inflate their earnings prior to the merger announcement by applying Benford's Law and confirm Benford's Law as a reliable indicator of earnings management. Using Benford's Law to study earnings management in the context of M&A provides investors and regulators with an easily implementable approach for assessing earnings management in the financial reports of acquiring firms. The findings enhance the evidence that share-financed acquirers engage in earnings management prior to the merger announcement.

CHAPTER 4: TIMING AND STRATEGIES OF EARNINGS MANAGEMENT BY SHARE-FINANCED ACQUIRERS PRIOR TO DEAL ANNOUNCEMENTS: CONNECTIONS PAYS[7]

Abstract

While it is well documented in the existing literature that share-financed acquirers might manipulate accrual-based and real earnings managements before deal announcement, this chapter investigates whether and how board connections between acquiring and target firms influence such earnings management behaviour. It compares abnormal accruals prior to a merger announcement between acquirers with connections to the target firms and those with no such connections. For cash-financed M&A deals, no significant difference is found in accrual-based and real earnings managements between these two types of firms. The analysis, however, shows that share-financed acquirers with board connections engage in accrual earnings management to inflate earnings significantly in the first and second years prior to the merger announcement, while those without board connections engage in real earnings management to inflate earnings just one year before the merger announcement. The findings suggest that less uncertainty about the M&A deals and stronger bargaining positions in negotiation for acquirers with board connections allow these firms to strategically time and confidently use accruals to inflate earnings, while share-financed acquirers without board connections strategically use real business transactions

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to increase earnings, which might be intended to avoid litigation and regulatory risk.

4.1 INTRODUCTION

As reviewed in section 3.2.1 in Chapter 3, acquiring firms tend to inflate earnings significantly prior to a share for share bid to reduce the cost of buying target firms. The main reason is that this will lead to a higher market price of the firms' stock. Consequently, fewer shares of the acquiring firm need to be issued for the target firms' shareholders. Evidence from Louis (2004) shows that there is a higher level of earnings management before a stock swap announcement, while the share price of acquirers increases significantly in the days leading to a merger announcement.

This chapter extends this line of research by investigating whether and how board connections between acquirer and target firms affect earnings management in acquirer firms before the merger announcement. Acquirer firms with board connections in target firms (i.e., the acquirers have board members who also serve on the board of directors of target firms at any time before an M&A deal) are suggested to be in a better position to inflate their earnings. Firms with board connections have better information flow and lower information asymmetry (Gompers and Xuan 2009; Singh and Schonlau 2009; Cai and Sevilir 2012; Larcker et al. 2013; Renneboog and Zhao 2014), which in turn may increase the certainty of deal completion (Renneboog and Zhao 2014) and mitigate the adverse effects of earnings management on deal success (Chen et al. 2011b). Therefore, acquirers with board connections may be less conservative in manipulating earnings by using accruals than acquirers without board connections.

Furthermore, firms with board connections are more likely to choose the time strategically to manipulate their earnings. Arguably, extremely abnormal earnings are highly likely to attract the attention of regulators and auditors (Dechow et al. 1996b; Mills 1998; Mills and Sansing 2000; Bradshaw and Sloan 2002) and thus the costs of extremely abnormal earnings may also lead to a litigation penalty (DuCharme et al. 2004; Graham et al. 2005; Zang 2012) particularly before the merger announcement (Gong et al. 2008; Ball and Shivakumar 2008). Thus, excessive earnings management around M&A deals could put acquirers at high risk of litigation. With less uncertainty concerning deal completion (Gompers and Xuan 2009; Cai and Sevilir 2012; Fracassi and Tate 2012; Renneboog and Zhao 2014), acquirers with board connections may be more confident that they can manipulate their earnings by using accruals long before a merger announcement. Furthermore, based on their stronger bargaining position in the negotiations (Cai and Sevilir 2012; El-Khatib et al. 2015), acquirers with board connections may convince the target to accept M&A deal process (Custódio and Metzger 2014), such as the announcement day, giving the acquirers more advantages in timing earnings management. Therefore, acquirers with board connections may time their earnings management to reduce potential litigation and regulatory risk. In contrast, acquirers without board connections may engage in real earnings management to avoid the adverse effects of earnings management on deal success and reduce the litigation and regulatory risk, as real earnings management is difficult to be detected (Roychowdhury 2006).

The study uses a sample of 295 M&A deals of public acquirers in the UK in the period 2007 to 2012, consisting of 62 share-financed deals and 233 cash-financed deals. There are 10 deals with board connections out of the 62 share-financed deals and 15 deals with board connections out of the 233 cash-financed deals. Share-financed acquirers without board connections are found to engage in real earnings management in the first year prior to the merger announcement, while share-financed acquirers with board connections engage in accrual earnings management significantly earlier than those without board connections in both the first and second years before the merger announcement. However, there is no evidence of significantly difference in earnings management before the merger announcement between cash-financed acquirers with and without board connections. The results suggest that share-financed acquirers with board connections strategically choose the timing of M&A deals and are less conservative in manipulating their earnings by using accruals, while share-financed acquirers without board connections strategically choose real earnings management to avoid litigation and regulatory risk[8].

Previous studies paid attention to investigating value creation and destruction after M&A returns to estimate the effect of connections on corporate investments (Ishii and Xuan 2014; El-Khatib et al. 2015; Schmidt 2015). Other studies have investigated the duration of negotiations and the probability of M&A deals as other tools to estimate the economic value of networks (Renneboog and Zhao 2014). In addition to merger performance and takeover process matters, the motivation of this chapter is to extend previous research by investigating the effect of board connections on earnings management prior to the merger announcement. Therefore, this research enhances understanding of earnings management behaviours prior to the merger announcement in UK.

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[8] *In this chapter, I did not use FSD_SCORE and KSMAX, which are deviations from Benford's Law, as earnings management proxies. As well-reviewed in Section 3.2.2, while the Benford's Law approach has no model misspecification problem, this method requires financial statements with more than 50 items for every firm-year to calculate FSD_SCORE and KSMAX to avoid measurement errors, which may reduce my M&A deals sample with board connections.*

The rest of this paper is organised as follows: Section 4.2 presents a discussion of the literature and hypotheses. Section 4.3 and section 4.4 describe sample selection and methodology. The empirical results and the robustness test are reported in section 4.5 and section 4.6. Section **Error! Reference source not found.** concludes the chapter.

4.2 LITERATURE REVIEW AND HYPOTHESES

4.2.1 Literature review

4.2.1.1 Earnings management of acquiring firms prior to a merger announcement:

As reviewed in section 3.2.1 in Chapter 3, in share-financed M&A deals the acquiring firms swap their own shares for the targets' shares. Hence, a higher stock price for acquirers prior to the takeover agreement day will lead to a lower deal cost for the acquirer. A higher acquirer stock price will also reduce the effects of earnings dilution because the acquiring firm may need to issue fewer shares to finance the deal (Erickson and Wang 1999). Therefore, previous research has generally found that share-financed acquirers engage in income-increasing earnings management (Louis 2004; Baik et al. 2007; Botsari and Meeks 2008; Gong et al. 2008) and real earnings management (Zhu and Lu 2013; Farooqi et al. 2017) prior to a merger announcement. In contrast, previous research shows that cash-financed acquirers do not engage in income-increasing earnings management (North and O'Connell 2002; Koumanakos et al. 2005).

With regard to the timing of earnings management, prior studies show that acquiring firms inflate earnings by using accruals within one or two years prior to the takeover announcement day. Using total abnormal accruals as a proxy for earnings management, Erickson and Wang (1999) and Louis (2004) find that acquirers manipulate total accruals prior to the merger announcement, particularly in the quarter immediately preceding the offer. Similarly, Botsari and Meeks (2008) show that acquiring firms inflate earnings management in both the first and second-year prior to a merger announcement.

A reason for acquirers to inflate earnings a long time - two years or one year - before the announcement day is that they may be attempting to avoid the attention of regulators and the risk of lawsuits. Concerning the attention of regulators, many studies (Dechow et al. 1996b; Mills 1998; Mills and Sansing 2000; Bradshaw et al. 2001) have shown that extremely abnormal earnings are very likely to attract such attention. A potential litigation penalty may be the cost of extremely abnormal earnings (DuCharme et al. 2004; Graham et al. 2005; Zang 2012). Moreover, acquirers may choose the timing of earnings management to avoid possible lawsuits. For example, Gong et al. (2008) claim that accruals earnings management in the first quarter prior to the offer leads to higher post-merger announcement lawsuits. Therefore, firms may inflate accrual-based earnings a long time before the announcement day to avoid lawsuits. Rangan (1998) points out that firms prevent possible lawsuits by strategically increasing earnings after stock issues. Moreover, most of the research on earnings management around stock issues shows that firms increase reported earnings immediately before stock issues to mislead investors about the future performance of the firms' stock. Therefore, investors might pay too much for shares, while firms obtain capital at lower cost (Teoh et al. 1998a; Teoh et al. 1998b; DuCharme et al. 2004; Kim and Park 2005).

Regarding deal completion, there are relatively few studies suggesting that the rate of successful deal completion is significantly affected by the level of earnings management of acquiring and target firms. Chen et al. (2011b) demonstrated that the magnitudes of earnings management of acquiring and target firms negatively affect the rate of successful deal completion. This view is supported by Marquardt and Zur (2015), who show that low accruals quality in target firms, an indication of high earnings management, leads to a lower rate of successful deal completion. The authors explain that information about the true value of acquirers and targets emerges between the announcement and completion dates. Overall, these studies highlight the fact that earnings management leads to deal uncertainty. Therefore, firms will tend to be more conservative when deciding whether to inflate earnings by using accruals if they are uncertain about deal completion.

4.2.1.2 Do board connections between acquirers and target firms matter?

Board connections between acquirers and target firms may matter because of several reasons. First, compared with acquirers without board connections, acquirers with board connections have lower information asymmetry. For M&A deals without board connections, Hansen (1987) indicates that both acquiring and target firms process M&A transactions with imperfect information. The deal valuation is explicitly affected by the information asymmetry problem. However, acquirers that have board connections with target firms have improved information flow and lower information asymmetry (Singh and Schonlau 2009; Gompers and Xuan 2009; Cai and Sevilir 2012; Larcker et al. 2013; Renneboog and Zhao 2014). There is evidence that lower information asymmetry may increase the certainty of deal completion (Renneboog and Zhao 2014). Therefore, acquirers with a board connection are more certain about deal completion than acquirers without board connection due to lower information asymmetry. Chen et al. (2011b) and Marquardt and Zur (2015) suggest that the successful rate of deal completion is negatively affected by earnings management acquirers and targets. Thus, acquirers may be more conservative in engaging in earnings management if they are less certain about the deal completion. However, compared with acquirers without a board connection, acquirers with board connections are more certain about the successful rate of deal completion due to lower information asymmetry, they might be less conservative in engaging in accrual earnings management.

The second reason is that acquirers with board connections have greater bargaining power in merger negotiations than acquirers without board connections. A study by Cai and Sevilir (2012) suggests that, compared with acquirers without board connections, acquirers with direct board connections, e.g. acquirers and target firms have common board members, can have a better-informed position about the targets, leading to a greater bargaining power for acquiring firms in merger negotiations with the targets. When there is a representative of the acquirer on the target board, there will be fewer outside bidders because outsider bidders who have less inside information have less incentive to offer a higher price to take over the target. Hence, acquirers with board connections have a stronger bargaining position in negotiations with targets (Kagel and Levin 1986).

As discussed above, acquirers want to avoid litigation and regulatory risk (Rangan 1998; DuCharme et al. 2004; Graham et al. 2005; Zang 2012; Gong et al. 2008) and a board connection with the target firms places the acquirers in a stronger bargaining position in the negotiations (Kagel and Levin 1986; Cai and Sevilir 2012). Acquirers may choose to engage in accrual earnings management a long time before M&A transactions and they may convince the target firms to accept the acquirers' chosen time for the M&A. There is evidence that target firms may be convinced to accept M&A process such as announcement day which provides the acquirer more flexibility in timing earnings management (Custódio and Metzger 2014). Therefore, acquirers with board connections may inflate earnings by using accruals in more than one year, e.g. two years prior to the merger announcement.

4.2.2 Hypotheses

The existing literature suggests that earnings management among acquiring and target firms affects the successful rate of deal completion (Chen et al. 2011b; Marquardt and Zur 2015). Acquirers with board connections may be less conservative in using accrual earnings management because they are less uncertain about the deal completion. However, there is also evidence that extremely abnormal accruals reported by a share-financed acquirer in the quarter immediately prior to the deal announcement could attract the attentions of regulators and lead to higher likelihood of post-merger announcement lawsuits (Gong et al. 2008). Therefore, if a share-financed acquirer engages in accrual earnings management, it is more likely that such manipulation will happen well in advance of the deal announcement to prevent litigation and regulatory risk. In addition, acquirers with board connections have a stronger bargaining position in the negotiations (Kagel and Levin 1986; Cai and Sevilir 2012). Thus they can convince target firms to accept M&A deal progress. Consequently, acquirers with board connections may strategically time their accrual earnings management to avoid litigation and regulatory risk. This study investigates the pattern of accrual-based earnings management of both share- and cash-financed acquirers with board connections up to three years before the merger announcement to test this intuition. However, the prior literature shows that cash-financed acquirers generally do not have the motivations to inflate earnings. The first two hypotheses are thus as follows:

H4.1: Share-financed acquirers with board connections engage in accrual earnings management significantly early prior to a merger announcement, while those without board connections do not engage in accrual earnings management.

H4.2: Cash-financed acquirers with and without board connections do not engage in accrual earnings management prior to a merger announcement.

The existing literature documents two methods for managing earnings, namely accrual-based earnings management and real earnings management. Accrual-based earnings management can be defined as exercising professional judgements in applying accounting standards that affect earnings reported in financial statements (Healy and Wahlen 1999). For example, firms manage the allowance for uncollectible accounts (McNichols and Wilson 1988; Cecchini et al. 2012), claim loss reserves from insurance (Beaver and McNichols 2001), defer tax assets (Miller and Skinner 1998), or other specific accounts (Healy and Wahlen 1999). The main benefit of employing accruals earnings management is that manipulating earnings has a low cost (Roychowdhury 2006). However, accruals earnings management could attract the attention of regulators (Dechow et al. 1996b; Mills 1998; Mills and Sansing 2000; Bradshaw et al. 2001) leading to the risk of lawsuits (DuCharme et al. 2004; Graham et al. 2005; Zang 2012).

Real earnings management can be defined as structuring actual business transactions to affect reported earnings (Healy and Wahlen 1999; Roychowdhury 2006). For example, firms may be involved in sales manipulation, overproduction and cutting of discretionary expense (Burgstahler and Dichev 1997; Bushee 1998; Bens et al. 2003; Roychowdhury 2006). The main benefit of employing real earnings management is that it is less likely attract the attention of auditors and regulators than accrual-based manipulation (Roychowdhury 2006).

Compared to acquirers with board connections, acquirers without board connections may be more conservative in using accrual earnings management because they are uncertain about deal completion. Extremely abnormal accruals for share-financed acquirers immediately prior to a merger announcement could result in potential litigation and regulatory risk (Gong et al. 2008). In contrast, the existing literature posits that real earnings management is less likely to attract the attention of auditors and regulators (Roychowdhury 2006). Therefore, acquirers without board connections may engage in real earnings management to increase their earnings to avoid potential litigation and regulatory risk. The third and fourth hypotheses are as follows:

H4.3: Share-financed acquirers without board connections engage in real earnings management prior to a merger announcement, while those with board connections do not engage in real earnings management.

H4.4: Cash-financed acquirers with and without board connections do not engage in real earnings management prior to a merger announcement.

4.3 SAMPLE SELECTION

The sample used in this chapter is similar to that in Chapter 3. The sample has 7,727 observations covering all UK firms in the period from 2007 to 2012. These observations provide enough data to estimate accrual-based and real earnings managements. For M&A sample, as explained in section 3.3, the final M&A sample consists of 295 deals of public acquirers including 62 share-financed deals and 233 cash-financed deals.

The data of board connections of acquirers and targets are based on information from Bloomberg, the *Financial Times*, Key Note and LinkedIn. First, from the Bloomberg database, a list of directors on board, including each director’s title and duration of tenure, the company’s name and the International Securities Identification Number (ISIN) for each company in each fiscal year. If information on the title or tenure of directors was missing from Bloomberg, the directors’ full names and company names were used to search for this information in the *Financial Times*, Key Note and LinkedIn. Second, the acquirer and target lists were obtained with information of the directors on the board for each acquirer and target firm in each fiscal year by matching the ISIN of the acquirers and targets with the ISIN of the directors on the board list. Third, linkages between acquirers and target firms were inferred. If at least one board director of the acquirer (target) had worked for the target (acquirer) prior to an merger announcement day, the acquirer was defined as having a board network with the target firm. Consequently, 10 share-financed deals and 15 cash-financed deals were identified which had board connections between acquirer and target firms.

Table 4-1: Year distribution of UK deals in the period of 2007 to 2012:

Year	Full sample	Rest of sample	M&A Deal						
			Total M&A	Share-financed deals			Cash-financed deals		
				Total	Board connection	No board connection	Total	Board connection	No board connection
2007	1,351	1,274	77	13	0	13	64	4	60
2008	1,363	1,313	50	12	2	10	38	4	34
2009	1,322	1,283	39	11	3	8	28	0	28
2010	1,294	1,246	48	15	3	12	33	0	33
2011	1,233	1,192	41	7	1	6	34	3	31
2012	1,164	1,124	40	4	1	3	36	4	32
Total	7,727	7,432	295	62	10	52	233	15	218

4.4 METHODOLOGY

4.4.1 Accrual-based and real earnings managements

Previous studies have provided evidence that managers are more likely to employ accruals to inflate reported earnings to achieve firms' financial targets because accrual earnings management is less costly than other types of earnings manipulation (Graham et al. 2005; Demerjian et al. 2013). Therefore, the study first investigated earnings management by estimating discretionary accruals in the period around a merger announcement.

Previous research has presented various models to estimate accrual-based earnings management (Holthausen et al. 1995; Fields et al. 2001; Dechow et al. 2010a; DeFond 2010; Ball 2013). However, Peasnell et al. (2000) argue that the most effective model for estimating accrual-based earnings management are the Jones (1991) model and the modified Jones model (Dechow et al. 1995). Thus, in this chapter, similar to Chapter 3, these two models are employed to estimate earnings management. As described in section 3.4.2, this chapter employs four measures of accrual-based earnings, which are abnormal total accruals estimated by Jones model and the modified Jones model ($ATA\_JM_{i,t-1-k}$ and $ATA\_MJM_{i,t-1-k}$) and abnormal working capital accruals estimated by Jones model and the modified Jones model ($\mathrm{AWCA\_JM}_{\mathrm{i,t-1-k}}$ and $\mathrm{AWCA\_MJM}_{\mathrm{i,t-1-k}}$).

Similar to Chapter 3, real earnings management proxies are also estimated to analyse the effect of board connections on earnings management prior to the merger announcement. As described in section 3.4.3, this chapter employs four measures of real earnings management, which are abnormal cash flow ($ACF_{i,t-1-k}$), abnormal discretionary expenses ($ADEXP_{i,t-1-k}$), abnormal production costs ($\mathrm{APROD}_{\mathrm{i,t-1-k}}$) and abnormal total real earnings management ($\mathrm{ATREM}_{\mathrm{i,t-1-k}}$).

4.4.2 Control variables

As reviewed in section 3.4.5 in Chapter 3, firm characteristics and incentives significantly affect earnings management. This chapter controls for firm characteristics that could drive aggressive earnings management by adding to the regressions firm size (SIZE), firm leverage (LEV), net operating assets (NOA) and return on assets (ROA). To control for the effect of firms' incentives to engage in earnings management, the chapter adds seasoned equity offering (SEO) and the firms' stock overvaluation, measured by the market-to-book ratio (MTB), to the regressions.

4.4.3 Empirical models

To test H4.1 and H4.2, the following regression is estimated:

Equation 4-1

$$\begin{aligned} Y_{i,t-1-k} = {} & \alpha + \beta_1\left(XMA\_WBC_{i,t}\right) + \beta_2\left(XMA\_WOBC_{i,t}\right) + \beta_3(MTB_{i,t-2-k}) \\ & + \beta_4(SIZE_{i,t-2-k}) + \beta_5(ROA_{i,t-1-k}) + \beta_6(LEV_{i,t-2-k}) \\ & + \beta_7(NOA_{i,t-2-k}) + \beta_8(SEO_{i,t-1-k}) + Year\ Fixed\ Effects \\ & + Industry\ Fixed\ Effects + \varepsilon_{i,t-1-k} \end{aligned}$$

where $\mathrm{Y}_{\mathrm{i,t-1-k}}$ is replaced by abnormal total accruals estimated by the Jones and modified Jones models ($\mathrm{ATA\_JM}_{\mathrm{i,t-1-k}}$ and $\mathrm{ATA\_MJM}_{\mathrm{i,t-1-k}}$) and abnormal working capital accruals estimated by the Jones and modified Jones models ($\mathrm{AWCA\_JM}_{\mathrm{i,t-1-k}}$ and $\mathrm{AWCA\_MJM}_{\mathrm{i,t-1-k}}$). *k* is replaced by 0, 1 and 2 to investigate the accruals of share- and cash-financed acquirers with and without board connections in years *t*-1, *t*-2 and *t*-3. Under investigating the effects of the board connections on share-financed payment, $\mathrm{XMA\_WBC_{i,t}}$ and $\mathrm{XMA\_WOBC_{i,t}}$ are indicator variables which are replaced by $\mathrm{SMA\_WBC_{i,t}}$ and $\mathrm{SMA\_WOBC_{i,t}}$. $\mathrm{SMA\_WBC_{i,t}}$ sets to 1 for share-financed acquiring firms with board connections in year *t*, and $\mathrm{SMA\_WOBC_{i,t}}$ sets to 1 for share-financed acquiring firms without board connections in year *t*, zero otherwise. Under investigating the effects of the board connections on cash-financed payment, $\mathrm{XMA\_WBC_{i,t}}$ and $\mathrm{XMA\_WOBC_{i,t}}$ are replaced by $\mathrm{CMA\_WBC_{i,t}}$ and $\mathrm{CMA\_WOBC_{i,t}}$. $\mathrm{CMA\_WBC_{i,t}}$ sets to 1 for cash-financed acquiring firms with board connections and $\mathrm{CMA\_WOBC_{i,t}}$ sets to 1 for cash-financed acquiring firms without board connections in year *t*, zero otherwise. $\mathrm{MTB_{i,t-2-k}}$, $\mathrm{SIZE_{i,t-2-k}}$, $\mathrm{ROA_{i,t-1-k}}$, $\mathrm{LEV_{i,t-2-k}}$, $\mathrm{NOA_{i,t-2-k}}$ and $\mathrm{SEO_{i,t-1-k}}$ are control variables to control for the effects of growth opportunities, firm size, firms' performance, debt, equity issuance and the level of NOA, respectively.

This chapter also employs a regression which includes indicator variables for both share- and cash-financed acquirers with and without board connections to test H4.1 and H4.2. The regression is presented as follows:

Equation 4-2

$$\begin{aligned} Y_{i,t-1-k} = {} & \alpha + \beta_1(SMA\_WBC_{i,t}) + \beta_2(SMA\_WOBC_{i,t}) + \beta_3(CMA\_WBC_{i,t}) \\ & + \beta_4(CMA\_WOBC_{i,t}) + \beta_5(MTB_{i,t-2-k}) + \beta_6(SIZE_{i,t-2-k}) \\ & + \beta_7(ROA_{i,t-1-k}) + \beta_8(LEV_{i,t-2-k}) + \beta_9(NOA_{i,t-2-k}) \\ & + \beta_{10}(SEO_{i,t-1-k}) + Year\ Fixed\ Effects + Industry\ Fixed\ Effects \\ & + \varepsilon_{i,t-1-k} \end{aligned}$$

To test H3.3 and H3.4, linear regressions are run, investigating the effects of share- and cash-financed acquirers with and without board connections on real earnings management prior to the merger announcement. Specifically, the following regression is estimated:

Equation 4-3

$$
\begin{aligned}
Y_{i,t-1-k} = \alpha &+ \beta_1(XMA\_WBC_{i,t}) + \beta_2(XMA\_WOBC_{i,t}) + \beta_3(MTB_{i,t-2-k}) \\
&+ \beta_4(SIZE_{i,t-2-k}) + \beta_5(ROA_{i,t-1-k}) + \beta_6(LEV_{i,t-2-k}) \\
&+ \beta_7(SEO_{i,t-1-k}) + Year\ Fixed\ Effects + Industry\ Fixed\ Effects \\
&+ \varepsilon_{i,t-1-k}
\end{aligned}
$$

$\mathrm{Y_{i,t-1-k}}$ is replaced with $\mathrm{ACF_{i,t-1-k}}$, $\mathrm{ADEXP_{i,t-1-k}}$, $\mathrm{APROD_{i,t-1-k}}$ and $\mathrm{ATREM_{i,t-1-k}}$. *k* is replaced by 0, 1 and 2 to investigate the effect of board connections on real earnings management in years *t*-1, *t*-2 and *t*-3. Other control variables are as explained in section 3.4.5. This regression excludes $\mathrm{NOA_{i,t-1-k}}$ because previous research has not shown a significant correlation between real earnings management and NOA.

Similar to accrual-based earnings management, indicator variables for both share- and cash-financed acquirers with and without board connections included to test H4.3 and H4.4. The regression is presented as follows:

Equation 4-4

$$
\begin{aligned}
Y_{i,t-1-k} = \alpha &+ \beta_1(SMA\_WBC_{i,t}) + \beta_2(SMA\_WOBC_{i,t}) + \beta_3(CMA\_WBC_{i,t}) \\
&+ \beta_4(CMA\_WOBC_{i,t}) + \beta_5(MTB_{i,t-2-k}) + \beta_6(SIZE_{i,t-2-k}) \\
&+ \beta_7(ROA_{i,t-1-k}) + \beta_8(LEV_{i,t-2-k}) + \beta_9(SEO_{i,t-1-k}) \\
&+ Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t-1-k}
\end{aligned}
$$

4.5 RESULTS

4.5.1 Descriptive statistics

The sample used to investigate the earnings management of share- and cash-financed acquirers with and without board connections prior to a merger announcement in this chapter is similar that in Chapter 3, comprising 7,727 observations covering all UK firms in the period from 2007 to 2012. As explained in Section 3.3, the final M&A sample consists of 295 deals, which include 62 share-financed deals and 233 cash-financed deals. There are 10 share-financed acquirers with board connections out of the 62 share-financed deals and 15 cash-financed acquirers with board connections out of the 233 cash-financed deals. The descriptive statistics for the whole sample were described in section 3.5.1. The descriptive statistics of share- and cash-financed acquirers with and without board connections are presented in Table 4-2. Table 4-2 shows that the means of accrual-based earnings management proxies of share-financed acquirers with board connections are positive and higher than those of share-financed acquirers without board connections, while the means of real earnings management proxies of share-financed acquirers with board connections are negative and lower than those of share-financed acquirers without board connections in year *t*-1. The descriptive statistics table also shows that the means of earnings management proxies of cash-financed acquirers is not consistently positive or negative. Overall, the descriptive statistics give initial evidence that share-financed acquirers with board connections may engage in accrual earnings management to inflate earnings in the first year prior to a merger announcement, while those without board connections engage in real earnings management to inflate earnings.

Besides, the evidence of the effect of board connections on earnings management prior to M&A deals is showed in the descriptive statistics table; the board connections seem also to influence the method of payment used in M&A. The sample of M&A deals in this research shows that deals with board connections are more likely to be paid in stock (10 out of 62 stock deals vs 15 out of 233 cash deals). This fact is consistent with Renneboog and Zhao (2014) which shows that connected targets more frequently accept offers that involve equity.

Table 4-2: Summary descriptive statistics

Statistics	N	MEAN	STD	MIN	P25	MEDIAN	P75	MAX
Panel A: Earnings management proxies of share-financed acquirers with board connections								
$ATA\_JM_{i,t-1}$	10	0.064	0.130	-0.146	-0.005	0.054	0.135	0.298
$AWCA\_JM_{i,t-1}$	10	0.050	0.137	-0.181	-0.004	0.050	0.137	0.283
$ATA\_MJM_{i,t-1}$	10	0.058	0.127	-0.150	-0.005	0.040	0.140	0.281
$AWCA\_MJM_{i,t-1}$	10	0.044	0.134	-0.184	-0.009	0.038	0.141	0.270
$ACF_{i,t-1}$	10	-0.083	0.165	-0.497	-0.145	-0.035	0.040	0.052
$ADEXP_{i,t-1}$	10	-0.073	0.319	-0.855	-0.076	0.019	0.107	0.203
$APROD_{i,t-1}$	10	-0.044	0.176	-0.380	-0.060	0.021	0.039	0.187
$ATREM_{i,t-1}$	10	-0.024	0.206	-0.370	-0.017	0.066	0.092	0.224
Panel B: Earnings management proxies of share-financed acquirers without board connections								
$ATA\_JM_{i,t-1}$	52	0.019	0.172	-0.456	-0.074	0.021	0.097	0.428
$AWCA\_JM_{i,t-1}$	52	0.014	0.184	-0.466	-0.084	0.017	0.081	0.441
$ATA\_MJM_{i,t-1}$	52	0.014	0.166	-0.461	-0.101	0.017	0.108	0.430
$AWCA\_MJM_{i,t-1}$	52	0.008	0.173	-0.463	-0.111	0.021	0.077	0.425
$ACF_{i,t-1}$	52	0.094	0.377	-1.115	-0.087	0.013	0.296	1.292
$ADEXP_{i,t-1}$	52	-0.001	0.471	-1.181	-0.212	0.041	0.307	0.872
$APROD_{i,t-1}$	52	0.053	0.365	-1.149	-0.126	0.010	0.212	1.367
$ATREM_{i,t-1}$	52	0.192	0.482	-0.616	-0.117	0.027	0.417	1.630
Panel C: Earnings management proxies of cash-financed acquirers with board connections								
$ATA\_JM_{i,t-1}$	15	0.013	0.093	-0.171	-0.066	0.026	0.081	0.165
$AWCA\_JM_{i,t-1}$	15	-0.003	0.114	-0.230	-0.122	0.034	0.097	0.161
$ATA\_MJM_{i,t-1}$	15	0.016	0.094	-0.159	-0.062	0.019	0.090	0.182
$AWCA\_MJM_{i,t-1}$	15	-0.001	0.115	-0.223	-0.125	0.017	0.107	0.178
$ACF_{i,t-1}$	15	0.004	0.182	-0.177	-0.142	0.001	0.041	0.538
$ADEXP_{i,t-1}$	15	-0.132	0.420	-1.124	-0.191	-0.029	0.114	0.357
$APROD_{i,t-1}$	15	0.110	0.421	-0.340	-0.102	0.000	0.318	1.367

Table 4-2: Summary descriptive statistics

Statistics	N	MEAN	STD	MIN	P25	MEDIAN	P75	MAX
$ATREM_{i,t-1}$	15	-0.124	0.309	-0.648	-0.289	-0.007	0.035	0.366
Panel D: Earnings management proxies of cash-financed acquirers without board connections								
$ATA\_JM_{i,t-1}$	218	0.003	0.108	-0.553	-0.043	0.002	0.038	0.428
$AWCA\_JM_{i,t-1}$	218	-0.006	0.127	-0.595	-0.059	-0.008	0.040	0.441
$ATA\_MJM_{i,t-1}$	218	0.004	0.110	-0.529	-0.041	0.003	0.039	0.430
$AWCA\_MJM_{i,t-1}$	218	-0.004	0.126	-0.589	-0.059	-0.005	0.042	0.425
$ACF_{i,t-1}$	218	-0.038	0.277	-1.115	-0.127	-0.033	0.031	1.292
$ADEXP_{i,t-1}$	218	0.030	0.298	-1.628	-0.064	0.066	0.176	1.073
$APROD_{i,t-1}$	218	-0.031	0.326	-1.149	-0.162	-0.029	0.118	1.367
$ATREM_{i,t-1}$	218	-0.005	0.345	-1.592	-0.152	0.008	0.158	1.630

Note: The table reports statistics of earnings management proxies of share- and cash-financed acquirers with and without board connections in the UK from 2007 and 2012. Definitions of variables are in the appendix.

4.5.2 Univariate analyses

To test the earnings management of share- and cash-financed acquirers with and without board connections prior to a merger announcement, a t-test is first run for the means of earnings management proxies of share- and cash-financed acquirers with and without board connections within three years prior to the merger announcement.

Table 4-3 presents the results of these t-tests for means of earnings management proxies. For share-financed acquirers with board connections, in year *t*-1, the means of abnormal total accruals ($\mathrm{ATA\_JM_{i,t-1}}$) and abnormal working capital accruals ($\mathrm{AWCA\_JM_{i,t-1}}$) derived from the Jones model are positive and significant at the 10% level (0.064 and 0.058 respectively). The means of abnormal total accruals ($\mathrm{ATA\_MJM_{i,t-1}}$) and abnormal working capital accruals ($\mathrm{AWCA\_MJM_{i,t-1}}$) derived from the modified Jones model are also positive and significant at the 10% level (0.050 and 0.044 respectively). For real earnings management proxies in year *t*-1, the means of abnormal cash flow ($\mathrm{ACF_{i,t-1}}$), abnormal discretionary expenses ($\mathrm{ADEXP_{i,t-1}}$), abnormal production costs ($\mathrm{APROD_{i,t-1}}$) and abnormal total real earnings management ($\mathrm{ATREM_{i,t-1}}$) are mixed and insignificant (-0.083, 0.028, -0.053 and -0.066 respectively). In year *t*-2, the means of accrual-based earnings management are significantly positive at the 10% level, except for $\mathrm{AWCA\_MJM_{i,t-2}}$, while those for real earnings management proxies are mixed and insignificant. In year *t*-3, the means of all accrual-based and real earnings management proxies are insignificant. For share-financed acquirers without board connections, the accrual-based earnings management proxies are positive in year *t*-1 and negative in year *t*-2 and year *t*-3, but insignificant. However, in year *t*-1, $\mathrm{ACF_{i,t-1}}$ and $\mathrm{ATREM_{i,t-1}}$ are positive and significant at the 10% and 5%

levels (0.094 and 0.155 respectively), while real earnings management proxies in year *t*-2 and year *t*-3 are mixed and insignificant. For cash-financed acquirers with and without board connections, the means of accrual-based and real earnings management proxies are insignificant in year *t*-1, year *t*-2 and year *t*-3.

These results are consistent with the hypotheses, which means that share-financed acquirers with board connections engage in accruals earnings management in the first year and the second years prior to the merger announcement, while share-financed acquirers without board connections engage in real earnings management, especially cash flow-based earnings, in the first year prior to the merger announcement. In contrast, cash-financed acquirers with and without board connections do not engage in earnings management prior to the merger announcement.

Table 4-3: Earnings management of share- and cash-financed acquirers with and without board connections

Earnings management proxies	With board connections					Without board connections			
	Year *t*-3	Year *t*-2		Year *t*-1		Year *t*-3	Year *t*-2	Year *t*-1	
A. Share-financed acquirers									
$ATA\_JM_{i,t-1-k}$	-0.062	0.055	*	0.064	*	-0.019	-0.021	0.019	
$AWCA\_JM_{i,t-1-k}$	-0.077	0.052	*	0.058	*	-0.011	-0.022	0.014	
$ATA\_MJM_{i,t-1-k}$	-0.077	0.046	*	0.050	*	-0.026	-0.024	0.014	
$AWCA\_MJM_{i,t-1-k}$	-0.090	0.043		0.044	*	-0.018	-0.026	0.008	
$ACF_{i,t-1-k}$	-0.056	0.005		-0.083		0.044	-0.017	0.094	*
$ADEXP_{i,t-1-k}$	0.058	-0.140		0.028		-0.015	-0.077	0.014	
$APROD_{i,t-1-k}$	-0.137	-0.073		-0.053		0.104	-0.020	0.042	
$ATREM_{i,t-1-k}$	-0.009	-0.157		-0.066		0.027	-0.058	0.155	**
B. Cash-financed acquirers									
$ATA\_JM_{i,t-1-k}$	0.011	0.019		0.013		0.002	-0.009	0.003	
$AWCA\_JM_{i,t-1-k}$	-0.002	0.008		-0.003		-0.007	-0.019	-0.006	
$ATA\_MJM_{i,t-1-k}$	0.023	0.017		0.016		0.004	-0.006	0.004	
$AWCA\_MJM_{i,t-1-k}$	0.010	0.005		-0.001		-0.005	-0.015	-0.004	
$ACF_{i,t-1-k}$	0.096	0.062		0.004		-0.068	-0.060	-0.038	
$ADEXP_{i,t-1-k}$	-0.396	-0.016		-0.185		-0.055	0.003	0.008	
$APROD_{i,t-1-k}$	-0.136	0.005		0.033		-0.012	-0.009	-0.041	
$ATREM_{i,t-1-k}$	-0.507	-0.051		-0.169		-0.165	-0.069	-0.027	

Note: The table reports mean earnings management of share- and cash-acquirers with and without board connections in the UK sample from 2007 and 2012. The sample includes 10 deals with board connections out of 62 share-financed deals and 15 deals with board connections out of 233 cash-financed deals. Significance is based on t-tests for the mean. ***, ** and * indicate the 1%, 5%, and 10% levels of significance respectively. Please see the Appendix for variable descriptions. Year *t*-1, year *t*-2 and year *t*-3 are the first, second and third years with an earnings release preceding the announcement of the deal.

4.5.3 Multivariate analyses

4.5.3.1 Earnings management of share- and cash-financed acquirers with and without board connection and the rest of sample test

The second main test is a regression used to compare the earnings management of share- and cash-financed acquirers with and without board connections with the rest of the sample. Table 4-4 presents the different earnings management of share- and cash-financed acquirers with and without board connections and the rest of the sample in the three years prior to the merger announcement. In Panel A, for the different accrual-based and real earnings management proxies of share-financed acquirers with board connections, abnormal total and abnormal working capital accruals following the Jones model ($\mathrm{ATA\_JM}_{i,t-1-k}$ and $\mathrm{AWCA\_JM}_{i,t-1-k}$)and the modified Jones model ($\mathrm{ATA\_MJM}_{i,t-1-k}$ and $\mathrm{AWCA\_MJM}_{i,t-1-k}$) of acquirers with a board connection are higher than those of the rest of the sample in the second and first years prior to the merger announcement (years *t*-2 and *t*-1, respectively), while acquirers with board connections have lower abnormal total and working capital accruals than the rest of the sample in the third year (year *t*-3) prior to the merger announcement. The results provide initial evidence that share-financed acquirers with board connections inflate accruals to a greater extent than the rest of the sample in the first and second years prior to the merger announcement. However, there is no evidence that the real earnings management of share-financed acquirers with board connections is significantly higher than that of the rest of the sample.

For the differences in accrual-based and real earnings management proxies of share-financed acquirers without board connections, $\mathrm{ACF}_{i,t-1}$ and $\mathrm{ATREM}_{i,t-1}$ of share-financed acquirers without board connections are significantly higher than those of the rest of the sample in year *t*-1, while $\mathrm{ADEXP}_{\mathrm{i,t-1}}$ and $\mathrm{APROD}_{\mathrm{i,t-1}}$ and accrual-based earnings management are insignificantly higher than those of the rest of the sample in year *t*-1. In years *t*-2 and *t*-3, there is evidence that real earnings management proxies of share-financed acquirers without board connections are significantly higher than those of the rest of the sample.

Panel B in Table 4-4 presents the differences earnings management of cash-financed acquirers with and without board connections and the rest of the sample in the three years prior to the merger announcement. However, there is no evidence that the earnings management proxies of cash-financed acquirers with and without board connections are significantly different from those of the rest of the sample.

To sum up, the results of Table 4-4 show that share-financed acquirers with board connections engage in accruals earnings management to inflate earnings in the first and second year prior to the merger announcement, while share-finance acquirer without board connections use real earnings management only one year before the merger announcement. Besides, there is no evidence that cash-financed acquirers with and without board connections manipulate earnings, neither using accrual earnings management nor using real earnings management, prior to the merger announcement.

Table 4-4: Mean differences in earnings management of share- and cash-financed acquirers with or without board connection with the rest of sample

Earnings management proxies	Rest of the sample	With board connection	Diff Mean	Rest of the sample	Without board connection	Diff Mean
(1)	(2)	(3)	(4)	(5)	(6)	(7)
A. Earnings management proxies of share-financed acquirers						
$\mathrm{ATA\_JM}_{i,t-1}$	-0.010	0.064	0.074 *	-0.010	0.019	0.030
$\mathrm{AWCA\_JM}_{i,t-1}$	-0.010	0.058	0.068 *	-0.010	0.014	0.024
$\mathrm{ATA\_MJM}_{i,t-1}$	-0.018	0.050	0.067 *	-0.018	0.014	0.032
$\mathrm{AWCA\_MJM}_{i,t-1}$	-0.017	0.044	0.061 *	-0.018	0.008	0.026
$\mathrm{ACF}_{i,t-1}$	-0.008	-0.083	-0.075	-0.008	0.094	0.102 *
$\mathrm{ADEXP}_{i,t-1}$	-0.020	0.028	0.047	-0.020	0.014	0.034
$\mathrm{APROD}_{i,t-1}$	-0.010	-0.053	-0.043	-0.011	0.042	0.053
$\mathrm{ATREM}_{i,t-1}$	-0.028	-0.066	-0.037	-0.030	0.155	0.184 ***
$\mathrm{ATA\_JM}_{i,t-2}$	-0.012	0.055	0.068 *	-0.012	-0.021	-0.009
$\mathrm{AWCA\_JM}_{i,t-2}$	-0.011	0.052	0.063 *	-0.011	-0.022	-0.011
$\mathrm{ATA\_MJM}_{i,t-2}$	-0.019	0.046	0.065 *	-0.019	-0.024	-0.005
$\mathrm{AWCA\_MJM}_{i,t-2}$	-0.018	0.043	0.061	-0.018	-0.026	-0.008
$\mathrm{ACF}_{i,t-2}$	-0.016	0.005	0.021	-0.016	-0.017	-0.001
$\mathrm{ADEXP}_{i,t-2}$	-0.015	-0.140	-0.126	-0.014	-0.077	-0.063
$\mathrm{APROD}_{i,t-2}$	-0.006	-0.073	-0.066	-0.006	-0.020	-0.013
$\mathrm{ATREM}_{i,t-2}$	-0.026	-0.157	-0.131	-0.026	-0.058	-0.032
$\mathrm{ATA\_JM}_{i,t-3}$	-0.009	-0.062	-0.052	-0.009	-0.019	-0.010
$\mathrm{AWCA\_JM}_{i,t-3}$	-0.008	-0.077	-0.069	-0.008	-0.011	-0.003
$\mathrm{ATA\_MJM}_{i,t-3}$	-0.016	-0.077	-0.061	-0.016	-0.026	-0.010
$\mathrm{AWCA\_MJM}_{i,t-3}$	-0.014	-0.090	-0.076	-0.014	-0.018	-0.004
$\mathrm{ACF}_{i,t-3}$	-0.021	-0.056	-0.035	-0.021	0.044	0.065

Table 4-4: Mean differences in earnings management of share- and cash-financed acquirers with or without board connection with the rest of sample

Earnings management proxies	Rest of the sample	With board connection	Diff Mean	Rest of the sample	Without board connection	Diff Mean
(1)	(2)	(3)	(4)	(5)	(6)	(7)
$ADEXP_{i,t-3}$	-0.024	0.058	0.082	-0.024	-0.015	0.009
$APROD_{i,t-3}$	0.004	-0.137	-0.141	0.003	0.104	0.101
$ATREM_{i,t-3}$	-0.051	-0.009	0.042	-0.052	0.027	0.079
Observations	7717	10		7675	52	
B. Earnings management proxies of cash-financed acquirers						
$ATA\_JM_{i,t-1}$	-0.010	0.013	0.024	-0.011	0.003	0.013
$AWCA\_JM_{i,t-1}$	-0.017	-0.003	0.015	-0.018	-0.006	0.012
$ATA\_MJM_{i,t-1}$	-0.010	0.016	0.026	-0.010	0.004	0.015
$AWCA\_MJM_{i,t-1}$	-0.017	-0.001	0.016	-0.018	-0.004	0.013
$ACF_{i,t-1}$	-0.008	0.004	0.012	-0.007	-0.038	-0.031
$ADEXP_{i,t-1}$	-0.019	-0.185	-0.166	-0.020	0.008	0.028
$APROD_{i,t-1}$	-0.010	0.033	0.043	-0.009	-0.041	-0.032
$ATREM_{i,t-1}$	-0.028	-0.169	-0.140	-0.029	-0.027	0.002
$ATA\_JM_{i,t-2}$	-0.012	0.019	0.031	-0.012	-0.009	0.003
$AWCA\_JM_{i,t-2}$	-0.019	0.008	0.027	-0.019	-0.019	0.001
$ATA\_MJM_{i,t-2}$	-0.011	0.017	0.029	-0.011	-0.006	0.005
$AWCA\_MJM_{i,t-2}$	-0.018	0.005	0.023	-0.018	-0.015	0.003
$ACF_{i,t-2}$	-0.016	0.062	0.077	-0.014	-0.060	-0.046
$ADEXP_{i,t-2}$	-0.015	-0.016	-0.001	-0.015	0.003	0.018
$APROD_{i,t-2}$	-0.007	0.005	0.011	-0.006	-0.009	-0.003
$ATREM_{i,t-2}$	-0.026	-0.051	-0.025	-0.025	-0.069	-0.044
$ATA\_JM_{i,t-3}$	-0.009	0.011	0.020	-0.009	0.002	0.011

Table 4-4: Mean differences in earnings management of share- and cash-financed acquirers with or without board connection with the rest of sample

Earnings management proxies	Rest of the sample	With board connection	Diff Mean	Rest of the sample	Without board connection	Diff Mean
(1)	(2)	(3)	(4)	(5)	(6)	(7)
$AWCA\_JM_{i,t-3}$	-0.016	-0.002	0.014	-0.016	-0.007	0.010
$ATA\_MJM_{i,t-3}$	-0.008	0.023	0.031	-0.008	0.004	0.012
$AWCA\_MJM_{i,t-3}$	-0.014	0.010	0.025	-0.015	-0.005	0.010
$ACF_{i,t-3}$	-0.021	0.096	0.117	-0.020	-0.068	-0.048
$ADEXP_{i,t-3}$	-0.024	-0.396	-0.372	-0.023	-0.055	-0.032
$APROD_{i,t-3}$	0.004	-0.136	-0.140	0.004	-0.012	-0.016
$ATREM_{i,t-3}$	-0.050	-0.507	-0.457	-0.048	-0.165	-0.117
Observations	7712	15		7509	218	

Note: The table reports the difference in mean of earnings management share- and cash-financed acquirers with and without board connections with the rest of the sample. The sample consists of 7,727 observations which include 10 deals with board connections out of 62 share-financed deals and 15 deals with board connections out of 233 cash-financed deals. Significance is based on t-tests for the difference in mean. ***, ** and * indicate 1%, 5%, and 10% levels of significance respectively. Please see the Appendix for variable descriptions.

4.5.3.2 Univariate correlations

Table 4-5 shows Pearson correlations among selected variables, including abnormal accruals estimated from the Jones and modified Jones models, abnormal real earnings proxies and control variables. The table indicates that share-financed acquirers with board connections ($\mathrm{SMA\_WBC_{i,t}}$) are positively correlated with abnormal total and working capital accruals estimated by the Jones ($\mathrm{ATA\_JM_{i,t-1}}$ and $\mathrm{AWCA\_JM_{i,t-1}}$) and modified Jones models ($\mathrm{ATA\_MJM_{i,t-1}}$ and $\mathrm{AWCA\_MJM_{i,t-1}}$), while share-financed acquirers without board connections ($\mathrm{SMA\_WOBC_{i,t}}$) are positively correlated with abnormal cash flow ($\mathrm{ACF_{i,t-1}}$) and abnormal total real earnings management ($\mathrm{ATREM_{i,t-1}}$). Moreover, accrual-based earning management proxies are negatively correlated with $\mathrm{NOA_{i,t-2}}$ and positively correlated with $\mathrm{LEV_{i,t-2}}$ and $\mathrm{ROA_{i,t-1}}$.

Table 4-5: Correlations

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
(1) $\mathrm{ATA\_JM}_{i,t-1}$	1																			
(2) $\mathrm{AWCA\_JM}_{i,t-1}$	*0.98*	1																		
(3) $\mathrm{ATA\_MJM}_{i,t-1}$	*0.97*	*0.95*	1																	
(4) $\mathrm{AWCA\_MJM}_{i,t-1}$	*0.96*	*0.97*	*0.98*	1																
(5) $\mathrm{ACF}_{i,t-1}$	*0.08*	*0.07*	*0.07*	*0.06*	1															
(6) $\mathrm{ADEXP}_{i,t-1}$	*0.09*	*0.09*	*0.09*	*0.09*	*-0.40*	1														
(7) $\mathrm{APROD}_{i,t-1}$	*-0.02*	*-0.02*	-0.01	-0.01	*0.20*	*0.22*	1													
(8) $\mathrm{ATREM}_{i,t-1}$	*0.15*	*0.14*	*0.14*	*0.14*	*0.17*	*0.78*	*0.34*	1												
(9) $\mathrm{SMA}_{i,t}$	*0.02*	*0.02*	*0.02*	*0.02*	*0.02*	0.01	0.01	*0.03*	1											
(10) $\mathrm{SMA\_WBC}_{i,t}$	*0.02*	*0.02*	*0.02*	*0.01*	-0.01	0.00	-0.01	0.00	*0.40*	1										
(11) $\mathrm{SMA\_WOBC}_{i,t}$	0.02	0.01	0.02	0.01	*0.03*	0.01	0.02	*0.03*	*0.92*	0.00	1									
(12) $\mathrm{CMA}_{i,t}$	0.02	0.02	0.01	0.02	-0.02	0.01	-0.02	0.00	-0.02	-0.01	-0.01	1								
(13) $\mathrm{CMA\_WBC}_{i,t}$	0.01	0.01	0.00	0.00	0.00	-0.01	0.01	-0.01	0.00	0.00	0.00	*0.25*	1							
(14) $\mathrm{CMA\_WOBC}_{i,t}$	0.02	0.02	0.01	0.02	-0.02	0.01	*-0.02*	0.00	-0.02	-0.01	-0.01	*0.97*	-0.01	1						
(15) $\mathrm{SIZE}_{i,t-2}$	0.01	0.02	0.01	0.01	*-0.06*	0.00	-0.01	*-0.06*	*-0.05*	-0.02	*-0.04*	*0.04*	*0.02*	*0.03*	1					
(16) $\mathrm{MTB}_{i,t-2}$	0.00	0.00	-0.01	-0.01	*0.02*	*-0.06*	*-0.04*	*-0.03*	0.01	0.00	0.01	0.01	0.00	0.01	*0.10*	1				
(17) $\mathrm{LEV}_{i,t-2}$	*0.04*	*0.04*	*0.03*	*0.03*	*0.04*	*0.02*	*0.04*	*0.04*	*-0.02*	-0.01	-0.02	-0.02	-0.01	-0.01	*0.11*	*-0.08*	1			
(18) $\mathrm{NOA}_{i,t-2}$	*-0.03*	*-0.03*	*-0.02*	*-0.02*	*-0.11*	*0.13*	0.01	*0.05*	*-0.03*	0.00	*-0.04*	-0.02	0.01	*-0.02*	*0.06*	*-0.18*	*0.19*	1		
(19) $\mathrm{ROA}_{i,t-1}$	*0.38*	*0.40*	*0.36*	*0.37*	*-0.22*	*0.11*	*-0.13*	*-0.05*	*-0.03*	0.00	*-0.03*	*0.06*	0.02	*0.06*	*0.30*	*-0.07*	0.01	*0.15*	1	
(20) $\mathrm{SEO}_{i,t-1}$	-0.05	-0.04	-0.05	-0.05	*0.11*	*-0.05*	*0.04*	*0.03*	*0.07*	0.00	*0.07*	*-0.04*	*-0.02*	*-0.03*	*-0.19*	*0.07*	0.01	0.00	*-0.21*	1

Note: This table reports pooled Pearson correlations for the entire sample of 7,727 firm-years over the period 2007-2012. Correlations significant at the 5% level are marked in bold and italic. Please see Appendix for variable descriptions.

4.5.3.3 Accrual-based earnings management of share- and cash-financed acquirers with and without board connections prior to a merger announcement

For share-financed acquirers where the abnormal total and working capital accruals estimated under the Jones model with the intercept of share-financed acquirers with and without board connections prior to a merger announcement, Table 4-6 presents the findings of Equation 4-1 where $\mathrm{XMA\_WBC_{i,t}}$ and $\mathrm{XMA\_WOBC_{i,t}}$ are replaced by $\mathrm{SMA\_WBC_{i,t}}$ and $\mathrm{SMA\_WOBC_{i,t}}$. The results show that, in year *t*-1, the coefficients of $\mathrm{SMA\_WBC_{i,t}}$ are positive (0.084 with the dependent variable $\mathrm{ATA\_JM_{i,t-1}}$; 0.079 with the dependent variable $\mathrm{AWCA\_JM_{i,t-1}}$) and significant at the 5% and 10% levels respectively. The coefficients of $\mathrm{SMA\_WOBC_{i,t}}$ are positive (0.021 with the dependent variable $\mathrm{AWCA\_JM_{i,t-1}}$; 0.019 with the dependent variable $\mathrm{ATA\_MJM_{i,t-1}}$), but insignificant. The results mean that only acquirers with board connections engage in their accruals in year *t*-1.

In year *t*-2, the coefficients of $\mathrm{SMA\_WBC_{i,t}}$ are positive (0.071 with the dependent variable $\mathrm{ATA\_JM_{i,t-2}}$; 0.071 with the dependent variable $\mathrm{AWCA\_JM_{i,t-2}}$) and both significant at the 10% level, whereas the coefficients of $\mathrm{SMA\_WOBC_{i,t}}$ are mixed and insignificant (0.000 with the dependent variable $\mathrm{AWCA\_JM_{i,t-2}}$; -0.003 with the dependent variable $\mathrm{AWCA\_JM_{i,t-2}}$). The results mean that acquirers with board connections inflate their earnings to a significant degree in year *t*-2, whereas acquirers without board connections do not.

In year *t*-3, the coefficients of $\mathrm{SMA\_WBC_{i,t}}$ are negative (-0.003 with the dependent variable $\mathrm{ATA\_JM_{i,t-3}}$; -0.005 with the dependent variable $\mathrm{AWCA\_JM_{i,t-3}}$) and are insignificant, while the coefficients of $\mathrm{SMA\_WOBC_{i,t}}$ are positive (0.020 with the dependent variable $\mathrm{ATA\_JM}_{\mathrm{i,t-3}}$; 0.022 with the dependent variable $\mathrm{AWCA\_JM}_{\mathrm{i,t-3}}$), but insignificant. The results mean that acquirers with and without board connections only inflate their earnings to an insignificant degree in year *t*-3.

To sum up, these results imply that share-financed acquiring firms with board connections manage earnings upwards by using accruals within the two years prior to the merger announcement, while those without board connections do not manage accrual-based earnings prior to the merger announcement. The evidence supports H4.1.

Table 4-6: Abnormal total and working capital accruals estimated by the Jones model with the intercept of share-financed acquirers with and without board connections

	ATA_JM						AWCA_JM					
	Year *t*-3		Year *t*-2		Year *t*-1		Year *t*-3		Year *t*-2		Year *t*-1	
Intercept	0.120	***	0.106	***	0.115	***	0.129	***	0.116	***	0.127	***
t-statistic	*12.1*		*11.2*		*12.74*		*11.86*		*11.24*		*12.77*	
$SMA\_WOBC_{i,t}$	0.020		0.000		0.021		0.022		-0.003		0.019	
t-statistic	*1.03*		*-0.03*		*1.22*		*1.01*		*-0.16*		*1.02*	
$SMA\_WBC_{i,t}$	-0.003		0.071	*	0.084	**	-0.005		0.071	*	0.079	*
t-statistic	*-0.08*		*1.86*		*2.25*		*-0.11*		*1.69*		*1.93*	
$MTB_{i,t-2-k}$	0.000		0.001	***	0.001	**	0.000		0.001	**	0.001	*
t-statistic	*0.78*		*2.63*		*2.57*		*0.65*		*2.32*		*1.85*	
$SIZE_{i,t-2-k}$	-0.006	***	-0.005	***	-0.006	***	-0.007	***	-0.006	***	-0.006	***
t-statistic	*-10.49*		*-9.33*		*-10.71*		*-10.1*		*-9.4*		*-10.65*	
$ROA_{i,t-1-k}$	0.175	***	0.169	***	0.171	***	0.183	***	0.176	***	0.178	***
t-statistic	*33.46*		*34.35*		*37.85*		*32.01*		*32.67*		*35.81*	
$LEV_{i,t-2-k}$	0.039	***	0.020	***	0.021	***	0.031	***	0.018	**	0.018	**
t-statistic	*4.95*		*2.6*		*2.81*		*3.68*		*2.1*		*2.11*	
$NOA_{i,t-2-k}$	-0.053	***	-0.050	***	-0.054	***	-0.055	***	-0.054	***	-0.058	***
t-statistic	*-8.58*		*-8.39*		*-9.46*		*-8.24*		*-8.21*		*-9.23*	
$SEO_{i,t-1-k}$	-0.003		-0.005		0.000		-0.008	*	-0.009	**	-0.005	
t-statistic	*-0.91*		*-1.44*		*-0.01*		*-1.89*		*-2.27*		*-1.27*	
Year Fixed Effects	*Yes*		*Yes*		*Yes*		*yes*		*yes*		*yes*	
Industry Fixed Effects	*Yes*		*Yes*		*Yes*		*yes*		*yes*		*yes*	
Adjusted. R^2	*0.1401*		*0.1417*		*0.1608*		*0.1305*		*0.1307*		*0.1474*	

Note: This table reports the results of OLS regression over the period from 2007 to 2012. The sample consists of 7,727 observations which include 10 deals with board connections out of 62 share-financed deals and 15 deals with board connections out of 233 cash-financed deals. The regression is as follows:$Y_{i,t-1-k} = \alpha + \beta_1(SMA\_WBC_{i,t}) + \beta_2(SMA\_WOBC_{i,t}) + \beta_3(MTB_{i,t-2-k}) + \beta_4(SIZE_{i,t-2-k}) + \beta_5(ROA_{i,t-1-k}) + \beta_6(LEV_{i,t-2-k}) + \beta_7(NOA_{i,t-2-k}) + \beta_8(SEO_{i,t-1-k}) + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t-1-k}$ (Equation 4-1)

$Y_{i,t-1-k}$ is replaced with $ATA\_JM_{i,t-1-k}$, and $AWCA\_JM_{i,t-1-k}$. *k* is replaced by 0, 1 and 2 to investigate accrual-based earnings management of share-financed acquirers with and without board connections in years *t*-1, *t*-2 and *t*-3. The independent variables are defined in the Appendix.

For share-financed acquirers where the abnormal total and working capital accruals estimated using the modified Jones model with the intercept of share-financed acquirer with and without board connections prior to a merger announcement, Table 4-7 shows the results derived from Equation 4-1 where $\mathrm{XMA\_WBC_{i,t}}$ and $\mathrm{XMA\_WOBC_{i,t}}$ are replaced by $\mathrm{SMA\_WBC_{i,t}}$ and $\mathrm{SMA\_WOBC_{i,t}}$. The coefficients of $\mathrm{SMA\_WBC_{i,t}}$ are positive (0.077 with the dependent variable $\mathrm{ATA\_MJM_{i,t-1}}$; 0.073 with the dependent variable $\mathrm{AWCA\_MJM_{i,t-1}}$) and significant at the 5% and 10% levels in year *t*-1. The coefficients of $\mathrm{SMA\_WOBC_{i,t}}$ are positive (0.014 with the dependent variable $\mathrm{ATA\_MJM_{i,t-1}}$; 0.013 with the dependent variable $\mathrm{AWCA\_MJM_{i,t-1}}$), but insignificant. The results mean that acquirers with board connections inflate their earnings in year *t*-1, while acquirers without board connections do not.

In year *t*-2, the coefficients of $\mathrm{SMA\_WBC_{i,t}}$ are positive (0.069 with the dependent variable $\mathrm{ATA\_MJM_{i,t-2}}$; 0.068 with the dependent variable $\mathrm{AWCA\_MJM_{i,t-2}}$); the first result is significant at 10% level, but the second is insignificant. The coefficients of $\mathrm{SMA\_WOBC_{i,t}}$ are negative (-0.004 with the dependent variable $\mathrm{ATA\_MJM_{i,t-2}}$; -0.008 with the dependent variable $\mathrm{AWCA\_MJM_{i,t-2}}$) and insignificant. The results mean that only acquirers with board connections inflate their earnings in year *t*-2.

In year *t*-3, the coefficients of $\mathrm{SMA\_WBC_{i,t}}$ are negative (-0.010 with the dependent variable $\mathrm{ATA\_MJM_{i,t-3}}$; -0.010 with the dependent variable $\mathrm{AWCA\_MJM_{i,t-3}}$), but insignificant, while the coefficients of $\mathrm{SMA\_WOBC_{i,t}}$ are positive (0.028 with the dependent variable $\mathrm{ATA\_MJM_{i,t-3}}$; 0.028 with the dependent variable $\mathrm{AWCA\_MJM_{i,t-3}}$), but insignificant. The results mean that neither acquirers with or without board connections inflate their earnings in year *t*-3. Thus, the evidence is consistent with H4.1.

In general, the results reported in Table 4-6 and Table 4-7 provide consistent evidence that share-financed acquiring firms with board connections engage in accrual earnings management early within the two years prior to the merger announcement, while those without board connections do not.

Table 4-7: Abnormal total and working capital accruals estimated by the modified Jones model with the intercept of share-financed acquirers with and without board connections

	ATA_MJM						AWCA_MJM					
	Year *t*-3		Year *t*-2		Year *t*-1		Year *t*-3		Year *t*-2		Year *t*-1	
Intercept	0.120	***	0.105	***	0.114	***	0.127	***	0.115	***	0.125	***
t-statistic	*11.97*		*11.2*		*12.75*		*11.7*		*11.12*		*12.7*	
$SMA\_WOBC_{i,t}$	0.028		-0.004		0.014		0.028		-0.008		0.013	
t-statistic	*1.42*		*-0.25*		*0.83*		*1.32*		*-0.42*		*0.68*	
$SMA\_WBC_{i,t}$	-0.010		0.069	*	0.077	**	-0.010		0.068		0.073	*
t-statistic	*-0.25*		*1.82*		*2.1*		*-0.24*		*1.63*		*1.8*	
$MTB_{i,t-2-k}$	0.000		0.001	***	0.001	***	0.000		0.001	**	0.001	*
t-statistic	*0.76*		*2.94*		*2.75*		*0.57*		*2.53*		*1.85*	
$SIZE_{i,t-2-k}$	-0.006	***	-0.005	***	-0.006	***	-0.007	***	-0.006	***	-0.006	***
t-statistic	*-10.49*		*-9.51*		*-10.77*		*-10.06*		*-9.46*		*-10.62*	
$ROA_{i,t-1-k}$	0.184	***	0.177	***	0.178	***	0.188	***	0.183	***	0.183	***
t-statistic	*35*		*36.19*		*39.89*		*32.93*		*34.09*		*37.18*	
$LEV_{i,t-2-k}$	0.036	***	0.019	**	0.021	***	0.029	***	0.016	*	0.018	**
t-statistic	*4.58*		*2.45*		*2.83*		*3.36*		*1.92*		*2.17*	
$NOA_{i,t-2-k}$	-0.051	***	-0.050	***	-0.054	***	-0.053	***	-0.052	***	-0.057	***
t-statistic	*-8.29*		*-8.4*		*-9.46*		*-7.86*		*-8.03*		*-9.18*	
$SEO_{i,t-1-k}$	0.001		-0.001		0.003		-0.005		-0.005		-0.003	
t-statistic	*0.14*		*-0.35*		*0.77*		*-1.15*		*-1.4*		*-0.71*	
Year Fixed Effects	*yes*		*yes*		*yes*		*yes*		*Yes*		*yes*	
Industry Fixed Effects	*yes*		*yes*		*yes*		*yes*		*Yes*		*yes*	
Adjusted. R^2	*0.1503*		*0.1539*		*0.1747*		*0.1363*		*0.1397*		*0.1564*	

Note: This table reports the results of OLS regression over the period from 2007 to 2012. The sample consists of 7,727 observations which include 10 deals with board connections out of 62 share-financed deals and 15 deals with board connections out of 233 cash-financed deals. The regression is as follows: $Y_{i,t-1-k} = \alpha + \beta_1(SMA\_WBC_{i,t}) + \beta_2(SMA\_WOBC_{i,t}) + \beta_3(MTB_{i,t-2-k}) + \beta_4(SIZE_{i,t-2-k}) + \beta_5(ROA_{i,t-1-k}) + \beta_6(LEV_{i,t-2-k}) + \beta_7(NOA_{i,t-2-k}) + \beta_8(SEO_{i,t-1-k}) + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t-1-k}$ (Equation 4-1)

$Y_{i,t-1-k}$ is replaced with $ATA\_MJM_{i,t-1-k}$, and $AWCA\_MJM_{i,t-1-k}$. *k* is replaced by 0, 1 and 2 to investigate accrual-based earnings management of share-financed acquirers with and without board connections in years *t*-1, *t*-2 and *t*-3. The independent variables are defined in the Appendix.

Under cash-financed acquirers where the abnormal total accruals and abnormal working capital accruals are estimated by the Jones model, Table 4-8 and Table 4-9 presents the effect of board connections on accrual-based earnings management of cash-financed acquirers prior to a merger announcement. The results of Table 4-8 derived from Equation 4-1 where $\mathrm{XMA\_WBC_{i,t}}$ and $\mathrm{XMA\_WOBC_{i,t}}$ are replaced by $\mathrm{CMA\_WBC_{i,t}}$ and $\mathrm{CMA\_WOBC_{i,t}}$. The coefficients of $\mathrm{CMA\_WBC_{i,t}}$ are insignificantly positive (0.016, 0.020 and 0.034 when the dependent variable is $\mathrm{ATA\_JM_{i,t-1}}$, $\mathrm{ATA\_JM_{i,t-2}}$ and $\mathrm{ATA\_JM_{i,t-3}}$; and 0.008, 0.024 and 0.032 when the dependent variable is $\mathrm{AWCA\_JM_{i,t-1}}$, $\mathrm{AWCA\_JM_{i,t-2}}$ and $\mathrm{AWCA\_JM_{i,t-3}}$), while the coefficients of $\mathrm{CMA\_WOBC_{i,t}}$ are insignificantly negative (-0.007, -0.014 and -0.007 when the dependent variable is $\mathrm{ATA\_JM_{i,t-1}}$, $\mathrm{ATA\_JM_{i,t-2}}$ and $\mathrm{ATA\_JM_{i,t-3}}$; -0.009, -0.016 and -0.010 when the dependent variable is $\mathrm{AWCA\_JM_{i,t-1}}$, $\mathrm{AWCA\_JM_{i,t-2}}$ and $\mathrm{AWCA\_JM_{i,t-3}}$). Thus, the evidence is consistent with hypothesis H4.2. These results indicate that cash-financed acquiring firms with board connections manage total accrual upward early prior to the merger announcement, but to an insignificant degree.

Table 4-8: Abnormal total and working capital accruals estimated by the Jones model with intercept of cash-financed acquirers with and without board connections

	ATA_JM						AWCA_JM					
	Year *t-3*		Year *t-2*		Year *t-1*		Year *t-3*		Year *t-2*		Year *t-1*	
Intercept	0.121	***	0.106	***	0.116	***	0.130	***	0.117	***	0.128	***
t-statistic	*12.17*		*11.29*		*12.85*		*11.93*		*11.32*		*12.87*	
$\mathrm{CMA\_WOBC}_{\mathrm{i.t}}$	-0.007		-0.014		-0.007		-0.010		-0.016		-0.009	
t-statistic	*-0.73*		*-1.62*		*-0.86*		*-0.96*		*-1.63*		*-0.97*	
$\mathrm{CMA\_WBC}_{\mathrm{i.t}}$	0.034		0.020		0.016		0.032		0.024		0.008	
t-statistic	*1.01*		*0.6*		*0.52*		*0.87*		*0.67*		*0.24*	
$\mathrm{MTB}_{\mathrm{i.t-2-k}}$	0.000		0.001	***	0.001	**	0.000		0.001	**	0.001	*
t-statistic	*0.8*		*2.62*		*2.57*		*0.67*		*2.31*		*1.85*	
$\mathrm{SIZE}_{\mathrm{i.t-2-k}}$	-0.006	***	-0.005	***	-0.006	***	-0.007	***	-0.006	***	-0.006	***
t-statistic	*-10.55*		*-9.36*		*-10.77*		*-10.16*		*-9.43*		*-10.7*	
$\mathrm{ROA}_{\mathrm{i.t-1-k}}$	0.175	***	0.169	***	0.171	***	0.183	***	0.177	***	0.178	***
t-statistic	*33.44*		*34.42*		*37.87*		*32*		*32.74*		*35.83*	
$\mathrm{LEV}_{\mathrm{i.t-2-k}}$	0.039	***	0.020	**	0.021	***	0.031	***	0.018	**	0.017	**
t-statistic	*4.96*		*2.56*		*2.78*		*3.68*		*2.06*		*2.08*	
$\mathrm{NOA}_{\mathrm{i.t-2-k}}$	-0.053	***	-0.050	***	-0.054	***	-0.056	***	-0.054	***	-0.058	***
t-statistic	*-8.62*		*-8.42*		*-9.51*		*-8.28*		*-8.24*		*-9.27*	
$\mathrm{SEO}_{\mathrm{i.t-1-k}}$	-0.003		-0.005		0.000		-0.008	*	-0.009	**	-0.004	
t-statistic	*-0.92*		*-1.47*		*0.05*		*-1.89*		*-2.3*		*-1.22*	
Year Fixed Effects	*yes*		*yes*		*yes*		*yes*		*yes*		*yes*	
Industry Fixed Effects	*yes*		*yes*		*yes*		*yes*		*yes*		*yes*	
Adjusted. R^2	*0.1402*		*0.1417*		*0.1602*		*0.1306*		*0.1308*		*0.147*	

Note: This table reports the results of OLS regression over the period from 2007 to 2012. The sample consists of 7,727 observations which include 10 deals with board connections out of 62 share-financed deals and 15 deals with board connections out of 233 cash-financed deals. The regression is as follows: $Y_{i,t-1-k} = \alpha + \beta_1(CMA\_WBC_{i,t}) + \beta_2(CMA\_WOBC_{i,t}) + \beta_3(MTB_{i,t-2-k}) + \beta_4(SIZE_{i,t-2-k}) + \beta_5(ROA_{i,t-1-k}) + \beta_6(LEV_{i,t-2-k}) + \beta_7(NOA_{i,t-2-k}) + \beta_8(SEO_{i,t-1-k}) + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t-1-k}$ (Equation 4-1)

$\mathrm{Y}_{\mathrm{i,t-1-k}}$ is replaced with $\mathrm{ATA\_JM}_{\mathrm{i,t-1-k}}$, and $\mathrm{AWCA\_JM}_{\mathrm{i,t-1-k}}$. *k* is replaced by 0, 1 and 2 to investigate accrual-based earnings management of share-financed acquirers with and without board connections in years *t*-1, *t*-2 and *t*-3. The independent variables are defined in the Appendix.

For cash-financed acquirers where the abnormal total accruals and abnormal working capital accruals are estimated by the modified Jones model, the results of Table 4-9 derived from Equation 4-1 where $\mathrm{XMA\_WBC_{i,t}}$ and $\mathrm{XMA\_WOBC_{i,t}}$ are replaced by $\mathrm{CMA\_WBC_{i,t}}$ and $\mathrm{CMA\_WOBC_{i,t}}$. The coefficients of $\mathrm{CMA\_WBC_{i,t}}$ are positive (0.019, 0.017 and 0.042 for the dependent variables $\mathrm{ATA\_MJM_{i,t-1}}$, $\mathrm{ATA\_MJM_{i,t-2}}$ and $\mathrm{ATA\_MJM_{i,t-3}}$ respectively; 0.010, 0.020 and 0.041 for the dependent variables $\mathrm{AWCA\_MJM_{i,t-1}}$, $\mathrm{AWCA\_MJM_{i,t-2}}$ and $\mathrm{AWCA\_MJM_{i,t-3}}$ respectively), whereas the coefficients of $\mathrm{CMA\_WOBC_{i,t}}$ are insignificantly negative (-0.005, -0.021 and -0.008 for the dependent variables $\mathrm{ATA\_MJM_{i,t-1}}$, $\mathrm{ATA\_MJM_{i,t-2}}$ and $\mathrm{ATA\_MJM_{i,t-3}}$ respectively; -0.007, -0.013 and -0.011 for the dependent variables $\mathrm{AWCA\_MJM_{i,t-1}}$, $\mathrm{AWCA\_MJM_{i,t-2}}$ and $\mathrm{AWCA\_JM_{i,t-3}}$). Thus, the evidence is consistent with H4.2. Therefore, under four alternative accruals earnings management proxies which presented in Table 4-8 and Table 4-9, cash-financed acquiring firms with board connections manage earnings upwards using accruals early prior to the merger announcement, but to an insignificant degree.

Table 4-9: Abnormal total and working capital accruals estimated by the modified Jones model with the intercept of cash-financed acquirers with and without board connections

	ATA_MJM						AWCA_MJM					
	Year *t-3*		Year *t-2*		Year *t-1*		Year *t-3*		Year *t-2*		Year *t-1*	
Intercept	0.121	***	0.106	***	0.115	***	0.128	***	0.115	***	0.126	***
t-statistic	*12.06*		*11.28*		*12.84*		*11.79*		*11.19*		*12.78*	
$\mathrm{CMA\_WOBC_{i.t}}$	-0.008		-0.012		-0.005		-0.011		-0.013		-0.007	
t-statistic	*-0.87*		*-1.36*		*-0.68*		*-1.1*		*-1.37*		*-0.73*	
$\mathrm{CMA\_WBC_{i.t}}$	0.042		0.017		0.019		0.041		0.020		0.010	
t-statistic	*1.26*		*0.53*		*0.62*		*1.11*		*0.58*		*0.3*	
$\mathrm{MTB_{i.t-2-k}}$	0.000		0.001	***	0.001	***	0.000		0.001	**	0.001	*
t-statistic	*0.79*		*2.93*		*2.75*		*0.6*		*2.52*		*1.85*	
$\mathrm{SIZE_{i.t-2-k}}$	-0.006	***	-0.005	***	-0.006	***	-0.007	***	-0.006	***	-0.006	***
t-statistic	*-10.57*		*-9.53*		*-10.83*		*-10.13*		*-9.48*		*-10.67*	
$\mathrm{ROA_{i.t-1-k}}$	0.184	***	0.178	***	0.178	***	0.188	***	0.184	***	0.183	***
t-statistic	*34.97*		*36.26*		*39.9*		*32.92*		*34.17*		*37.2*	
$\mathrm{LEV_{i.t-2-k}}$	0.036	***	0.019	**	0.021	***	0.029	***	0.016	*	0.018	**
t-statistic	*4.59*		*2.42*		*2.8*		*3.37*		*1.89*		*2.14*	
$\mathrm{NOA_{i.t-2-k}}$	-0.052	***	-0.050	***	-0.054	***	-0.053	***	-0.052	***	-0.057	***
t-statistic	*-8.34*		*-8.42*		*-9.5*		*-7.91*		*-8.05*		*-9.21*	
$\mathrm{SEO_{i.t-1-k}}$	0.001		-0.001		0.003		-0.005		-0.005		-0.002	
t-statistic	*0.14*		*-0.38*		*0.82*		*-1.15*		*-1.44*		*-0.68*	
Year Fixed Effects	*yes*		*yes*		*Yes*		*yes*		*yes*		*yes*	
Industry Fixed Effects	*yes*		*yes*		*Yes*		*yes*		*yes*		*yes*	
Adjusted. R^2	*0.1503*		*0.1537*		*0.1743*		*0.1364*		*0.1396*		*0.1561*	

Note: This table reports the results of OLS regression over the period from 2007 to 2012. The sample consists of 7,727 observations which include 10 deals with board connections out of 62 share-financed deals and 15 deals with board connections out of 233 cash-financed deals. The regression is as follows: $Y_{i,t-1-k} = \alpha + \beta_1(CMA\_WBC_{i,t}) + \beta_2(CMA\_WOBC_{i,t}) + \beta_3(MTB_{i,t-2-k}) + \beta_4(SIZE_{i,t-2-k}) + \beta_5(ROA_{i,t-1-k}) + \beta_6(LEV_{i,t-2-k}) + \beta_7(NOA_{i,t-2-k}) + \beta_8(SEO_{i,t-1-k}) + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t-1-k}$ (Equation 4-1)

$\mathrm{Y_{i,t-1-k}}$ is replaced with $\mathrm{ATA\_MJM_{i,t-1-k}}$, and $\mathrm{AWCA\_MJM_{i,t-1-k}}$. *k* is replaced by 0, 1 and 2 to investigate accrual-based earnings management of share-financed acquirers with and without board connections in years *t*-1, *t*-2 and *t*-3. The independent variables are defined in the Appendix.

For using alternative regression (Equation 4-2) which includes both share- and cash-financed acquirers with and without board connections indicator variables ($\mathrm{SMA\_WBC_{i,t}}$, $\mathrm{SMA\_WOBC_{i,t}}$, $\mathrm{CMA\_WBC_{i,t}}$ and $\mathrm{CMA\_WOBC_{i,t}}$) to test H4.1 and H4.2 as described in Section 4.4.3. When the abnormal total and working capital accruals are estimated by the Jones model, Table 4-10 shows that the coefficients of $\mathrm{SMA\_WBC_{i,t}}$ are significantly positive (0.083 and 0.071 for the dependent variables $\mathrm{ATA\_JM_{i,t-1}}$ and $\mathrm{ATA\_JM_{i,t-2}}$ respectively; and 0.078 and 0.071 for the dependent variables $\mathrm{AWCA\_JM_{i,t-1}}$ and $\mathrm{AWCA\_JM_{i,t-2}}$), while the coefficients of $\mathrm{SMA\_WOBC_{i,t}}$ are negative (-0.003 with the dependent variable $\mathrm{ATA\_JM_{i,t-3}}$; -0.005 with the dependent variable $\mathrm{AWCA\_JM_{i,t-3}}$), but insignificant. In contrast, the coefficients of $\mathrm{SMA\_WOBC_{i,t}}$, $\mathrm{CMA\_WBC_{i,t}}$ and $\mathrm{CMA\_WOBC_{i,t}}$ when dependent variables are accrual-based earnings management proxies in the three years prior to the merger announcement are insignificant. Thus, the evidence is consistent with H4.1 and H4.2. These results indicate that cash-financed acquiring firms with board connections manage total accruals upward prior to the merger announcement, but to an insignificant degree, while share-financed acquiring firms with board connections manage accrual-based earnings upward early within the two years prior to the merger announcement and those without board connections do not use accruals to inflate earnings prior to the merger announcement.

Table 4-10: Abnormal total and working capital accruals estimated by the Jones model with the intercept of share and cash-financed acquirers with and without board connections

	ATA_JM						AWCA_JM					
	Year *t-3*		Year *t-2*		Year *t-1*		Year *t-3*		Year *t-2*		Year *t-1*	
Intercept	0.121	***	0.106	***	0.115	***	0.129	***	0.117	***	0.127	***
t-statistic	*12.12*		*11.24*		*12.75*		*11.89*		*11.28*		*12.79*	
$SMA\_WOBC_{i.t}$	0.020		-0.001		0.021		0.021		-0.004		0.019	
t-statistic	*1.02*		*-0.05*		*1.21*		*1*		*-0.18*		*1.01*	
$SMA\_WBC_{i.t}$	-0.003		0.071	*	0.083	**	-0.005		0.071	*	0.078	*
t-statistic	*-0.08*		*1.85*		*2.25*		*-0.11*		*1.68*		*1.92*	
$CMA\_WOBC_{i.t}$	-0.007		-0.014		-0.007		-0.010		-0.016		-0.009	
t-statistic	*-0.72*		*-1.61*		*-0.83*		*-0.94*		*-1.63*		*-0.94*	
$CMA\_WBC_{i.t}$	0.034		0.020		0.016		0.032		0.024		0.008	
t-statistic	*1.01*		*0.61*		*0.53*		*0.87*		*0.67*		*0.25*	
$MTB_{i.t-2-k}$	0.000		0.001	***	0.001	**	0.000		0.001	**	0.001	*
t-statistic	*0.77*		*2.62*		*2.57*		*0.64*		*2.31*		*1.85*	
$SIZE_{i.t-2-k}$	-0.006	***	-0.005	***	-0.006	***	-0.007	***	-0.006	***	-0.006	***
t-statistic	*-10.51*		*-9.34*		*-10.7*		*-10.12*		*-9.41*		*-10.64*	
$ROA_{i.t-1-k}$	0.175	***	0.169	***	0.171	***	0.183	***	0.177	***	0.178	***
t-statistic	*33.45*		*34.39*		*37.85*		*32*		*32.71*		*35.81*	
$NOA_{i.t-2-k}$	0.039	***	0.020	***	0.021	***	0.031	***	0.018	**	0.018	**
t-statistic	*4.96*		*2.58*		*2.81*		*3.68*		*2.08*		*2.1*	
$SEO_{i.t-1-k}$	-0.053	***	-0.050	***	-0.054	***	-0.056	***	-0.054	***	-0.058	***
t-statistic	*-8.6*		*-8.43*		*-9.48*		*-8.26*		*-8.25*		*-9.24*	
$NOA_{i.t-2-k}$	-0.003		-0.005		0.000		-0.008	*	-0.009	**	-0.005	
t-statistic	*-0.93*		*-1.44*		*-0.02*		*-1.9*		*-2.27*		*-1.28*	
Year Fixed Effects	*yes*		*yes*		*yes*		*yes*		*yes*		*yes*	
Industry Fixed Effects	*yes*		*yes*		*yes*		*yes*		*yes*		*yes*	
Adjusted. R^2	*0.1401*		*0.1418*		*0.1607*		*0.1305*		*0.1309*		*0.1473*	

Note: This table reports the results of OLS regression over the period from 2007 to 2012. The sample consists of 7,727 observations which include 10 deals with board connections out of 62 share-financed deals without board connections and 15 deals with board connections out of 233 cash-financed deals. The regression is as follows: $Y_{i,t-1-k} = \alpha + \beta_1(SMA\_WBC_{i,t}) + \beta_2(SMA\_WOBC_{i,t}) + \beta_3(CMA\_WBC_{i,t}) + \beta_4(CMA\_WOBC_{i,t}) + \beta_5(MTB_{i,t-2-k}) + \beta_6(SIZE_{i,t-2-k}) + \beta_7(ROA_{i,t-1-k}) + \beta_8(LEV_{i,t-2-k}) + \beta_9(NOA_{i,t-2-k}) + \beta_{10}(SEO_{i,t-1-k}) + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t-1-k}$ (Equation 4-2). $Y_{i,t-1-k}$ is replaced with $ATA\_JM_{i,t-1-k}$, and $AWCA\_JM_{i,t-1-k}$. *k* is replaced by 0, 1 and 2 to investigate accrual-based earnings management of share-financed acquirers with and without board connections in years *t*-1, *t*-2 and *t*-3. The independent variables are defined in the Appendix.

When the abnormal total and working capital accruals are estimated by the modified Jones model, Table 4-11 shows that the coefficients of $\mathrm{SMA\_WBC_{i,t}}$ are positive (0.077 and 0.069 for the dependent variables $\mathrm{ATA\_MJM_{i,t-1}}$ and $\mathrm{ATA\_MJM_{i,t-2}}$, respectively, and significant at 5% and 10% level; 0.073 with the dependent variable $\mathrm{AWCA\_MJM_{i,t-1}}$ and significant at 10% level; and 0.068 with the dependent variable $\mathrm{AWCA\_MJM_{i,t-2}}$, but insignificant), while the coefficients of $\mathrm{SMA\_WOBC_{i,t}}$ are insignificantly negative (-0.010 with the dependent variable $\mathrm{ATA\_JM_{i,t-3}}$; -0.010 with the dependent variable $\mathrm{AWCA\_JM_{i,t-3}}$). In contrast, the coefficients of $\mathrm{SMA\_WOBC_{i,t}}$, $\mathrm{CMA\_WBC_{i,t}}$ and $\mathrm{CMA\_WOBC_{i,t}}$ when dependent variables are accrual-based earnings management proxies in years *t*-1, *t*-2 and *t*-3 prior to the merger announcement are insignificant. Thus, the evidence is consistent with H4.1 and H4.2. These results indicate that share-financed acquiring firms with board connections manage accrual-based earnings upwards early within the two years prior to the merger announcement and those without board connections do not. The results also show that cash-financed acquiring firms with board connections manage total accrual upwards prior to the merger announcement, but to an insignificant degree.

Table 4-11: Abnormal total and working capital accruals estimated by the modified Jones model with the intercept of share and cash-financed acquirers with and without board connections

	ATA_MJM						AWCA_MJM					
	Year *t*-3		Year *t*-2		Year *t*-1		Year *t*-3		Year *t*-2		Year *t*-1	
Intercept	0.120	***	0.106	***	0.114	***	0.128	***	0.115	***	0.125	***
t-statistic	*12*		*11.24*		*12.76*		*11.74*		*11.16*		*12.71*	
$\mathrm{SMA\_WOBC_{i.t}}$	0.028		-0.005		0.014		0.028		-0.009		0.012	
t-statistic	*1.41*		*-0.26*		*0.82*		*1.31*		*-0.43*		*0.67*	
$\mathrm{SMA\_WBC_{i.t}}$	-0.010		0.069	*	0.077	**	-0.010		0.068		0.073	*
t-statistic	*-0.25*		*1.81*		*2.1*		*-0.24*		*1.63*		*1.8*	
$\mathrm{CMA\_WOBC_{i.t}}$	-0.008		-0.012		-0.005		-0.011		-0.013		-0.006	
t-statistic	*-0.85*		*-1.36*		*-0.65*		*-1.09*		*-1.37*		*-0.71*	
$\mathrm{CMA\_WBC_{i.t}}$	0.043		0.017		0.019		0.041		0.021		0.010	
t-statistic	*1.26*		*0.53*		*0.62*		*1.12*		*0.58*		*0.31*	
$\mathrm{MTB_{i.t-2-k}}$	0.000		0.001	***	0.001	***	0.000		0.001	**	0.001	*
t-statistic	*0.76*		*2.93*		*2.75*		*0.57*		*2.53*		*1.85*	
$\mathrm{SIZE_{i.t-2-k}}$	-0.006	***	-0.005	***	-0.006	***	-0.007	***	-0.006	***	-0.006	***
t-statistic	*-10.52*		*-9.51*		*-10.77*		*-10.08*		*-9.47*		*-10.62*	
$\mathrm{ROA_{i.t-1-k}}$	0.184	***	0.178	***	0.178	***	0.188	***	0.184	***	0.183	***
t-statistic	*34.99*		*36.22*		*39.87*		*32.94*		*34.12*		*37.17*	
$\mathrm{LEV_{i.t-2-k}}$	0.036	***	0.019	**	0.021	***	0.029	***	0.016	*	0.018	**
t-statistic	*4.59*		*2.44*		*2.83*		*3.37*		*1.9*		*2.17*	
$\mathrm{NOA_{i.t-2-k}}$	-0.051	***	-0.050	***	-0.054	***	-0.053	***	-0.052	***	-0.057	***
t-statistic	*-8.31*		*-8.42*		*-9.48*		*-7.88*		*-8.06*		*-9.19*	
$\mathrm{SEO_{i.t-1-k}}$	0.000		-0.001		0.003		-0.005		-0.005		-0.003	
t-statistic	*0.13*		*-0.35*		*0.77*		*-1.16*		*-1.4*		*-0.71*	
Year Fixed Effects	*yes*		*yes*		*yes*		*yes*		*yes*		*yes*	
Industry Fixed Effects	*yes*		*yes*		*yes*		*yes*		*yes*		*yes*	
Adjusted. R^2	*0.1503*		*0.1539*		*0.1746*		*0.1364*		*0.1397*		*0.1563*	

Note: This table reports the results of OLS regression over the period from 2007 to 2012. The sample consists of 7,727 observations which include 10 deals with board connections out of 62 share-financed deals and 15 deals with board connections out of 233 cash-financed deals. The regression is as follows:$Y_{i,t-1-k} = \alpha + \beta_1(SMA\_WBC_{i,t}) + \beta_2(SMA\_WOBC_{i,t}) + \beta_3(CMA\_WBC_{i,t}) + \beta_4(CMA\_WOBC_{i,t}) + \beta_5(MTB_{i,t-2-k}) + \beta_6(SIZE_{i,t-2-k}) + \beta_7(ROA_{i,t-1-k}) + \beta_8(LEV_{i,t-2-k}) + \beta_9(NOA_{i,t-2-k}) + \beta_{10}(SEO_{i,t-1-k}) + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t-1-k}$ (Equation 4-2). $\mathrm{Y_{i,t-1-k}}$ is replaced with $\mathrm{ATA\_MJM_{i,t-1-k}}$, and $\mathrm{AWCA\_MJM_{i,t-1-k}}$. *k* is replaced by 0, 1 and 2 to investigate accrual-based earnings management of share-financed acquirers with and without board connections in years *t*-1, *t*-2 and *t*-3. The independent variables are defined in the Appendix.

4.5.3.4 Real earnings management of share- and cash-financed acquirers with and without board connections prior to a merger announcement

For the real earnings management proxies, Table 4-12 presents the real earnings management behaviour of share-financed acquiring firms with and without board connections prior to a merger announcement. The results derived from Equation 4-3 show that, in year *t*-1, the coefficients of $\mathrm{SMA\_WOBC}_{i,t}$ are positive (0.088 with the dependent variable $\mathrm{ACF}_{i,t-1}$; 0.049 with the dependent variable $\mathrm{ADEXP}_{i,t-1}$; 0.031 with the dependent variable $\mathrm{APROD}_{i,t-1}$; and 0.178 with the dependent variable $\mathrm{ATREM}_{i,t-1}$). However, only $\mathrm{ACF}_{i,t-1}$ and $\mathrm{ATREM}_{i,t-1}$ are significant at the 5% level. The coefficients of $\mathrm{SMA\_WBC}_{i,t}$ are mixed (-0.055 with the dependent variable $\mathrm{ACF}_{i,t-1}$; 0.055 with the dependent variable $\mathrm{ADEXP}_{i,t-1}$; -0.024 with the dependent variable $\mathrm{APROD}_{i,t-1}$; and -0.010 with the dependent variable $\mathrm{ATREM}_{i,t-1}$), but insignificant. These results suggest that only acquirers without board connections engages in real earnings management in year *t*-1.

In year *t*-2, the coefficients of $\mathrm{SMA\_WOBC}_{i,t}$ are mixed and insignificant (-0.016 with the dependent variable $\mathrm{ACF}_{i,t-1}$; 0.005 with the dependent variable $\mathrm{ADEXP}_{i,t-1}$; -0.055 with the dependent variable $\mathrm{APROD}_{i,t-1}$; and -0.024 with the dependent variable $\mathrm{ATREM}_{i,t-1}$). Similar to the coefficients for $\mathrm{SMA\_WOBC}_{i,t}$, the coefficients of $\mathrm{SMA\_WBC}_{i,t}$ are mixed and insignificant (0.053 with the dependent variable $\mathrm{ACF}_{i,t-1}$; -0.164 with the dependent variable $\mathrm{ADEXP}_{i,t-1}$; -0.051 with the dependent variable $\mathrm{APROD}_{i,t-1}$; and -0.123 with the dependent variable $\mathrm{ATREM}_{i,t-1}$). The results mean that both share-financed acquirers with and without board connections manipulate their real earnings activities to an insignificant degree in year *t*-2. Similar to year *t*-2, the coefficients of the real earnings management proxies of $\mathrm{SMA\_WOBC_{i,t}}$ and $\mathrm{SMA\_WBC_{i,t}}$ are insignificant in year *t*-3.

To sum up, these results imply that share-financed acquiring firms without board connections manipulate real earnings activities in the first year prior to the merger announcement, while those with board connections do not do so. The evidence supports H4.3.

Table 4-12 :Abnormal real earnings management of share-financed acquirers with and without board connections

	ACF			ADEXP			APROD			ATREM		
	Year *t-3*	Year *t-2*	Year *t-1*	Year *t-3*	Year *t-2*	Year *t-1*	Year *t-3*	Year *t-2*	Year *t-1*	Year *t-3*	Year *t-2*	Year *t-1*
Intercept	-0.039	-0.059 **	0.002	0.125 ***	-0.005	-0.098 ***	-0.100 ***	-0.095 ***	-0.056 ***	0.052	-0.076 *	-0.092 **
t-statistic	-1.16	-2.42	0.12	2.79	-0.14	-2.87	-3.51	-4.01	-2.99	1.02	-1.86	-2.54
$SMA\_WOBC_{i,t}$	-0.037	-0.016	0.088 **	0.148	0.005	0.049	0.056	-0.055	0.031	0.052	-0.024	0.178 **
t-statistic	-0.53	-0.32	2.25	1.66	0.07	0.76	0.93	-1.16	0.84	0.5	-0.3	2.58
$SMA\_WBC_{i,t}$	-0.025	0.053	-0.055	0.067	-0.164	0.055	-0.131	-0.051	-0.024	0.043	-0.123	-0.010
t-statistic	-0.17	0.51	-0.65	0.37	-1.07	0.39	-1.02	-0.49	-0.29	0.21	-0.74	-0.07
$MTB_{i,t-2-k}$	0.001	0.000	0.001	-0.005 ***	-0.002	-0.004 ***	-0.004 ***	-0.003 ***	-0.003 ***	-0.004 **	-0.001	-0.003 **
t-statistic	0.93	0.37	0.79	-3.21	-1.5	-3.43	-4.64	-4.07	-4.48	-2.52	-0.99	-2.29
$SIZE_{i,t-2-k}$	-0.002	0.003 ***	0.000 ***	-0.006 **	-0.006 ***	-0.004 ***	0.007 ***	0.006 ***	0.003 ***	-0.008 **	-0.005 ***	-0.007 ***
t-statistic	-0.81	1.75	-0.05	-2.03	-2.53	-1.92	3.78	4.11	2.48	-2.46	-2.14	-3.16
$ROA_{i,t-1-k}$	-0.259 ***	-0.208 ***	-0.171 ***	0.188 ***	0.134 ***	0.128 ***	-0.152 ***	-0.144 ***	-0.111 ***	-0.039	-0.094 ***	-0.065 ***
t-statistic	-14.11	-15.79	-16.69	7.94	6.77	7.4	-9.48	-11.02	-11.05	-1.45	-4.39	-3.55
$LEV_{i,t-2-k}$	0.137 ***	0.084 ***	0.055 ***	0.062 *	0.030	0.057 **	0.012	0.035 *	0.046 ***	0.135 ***	0.075 **	0.078 **
t-statistic	4.96	4.05	3.17	1.74	0.97	1.96	0.5	1.72	2.8	3.31	2.22	2.55
$SEO_{i,t-1-k}$	0.065 ***	0.045 ***	0.048 ***	-0.051 ***	-0.033 **	-0.022 *	0.002	0.008	0.018 **	0.023	0.003	0.024 *
t-statistic	5.01	4.82	6.39	-3.01	-2.38	-1.76	0.14	0.93	2.5	1.18	0.2	1.75
Year Fixed Effects	yes	yes	yes	yes	yes	yes	yes	Yes	yes	yes	yes	yes
Industry Fixed Effects	yes	yes	yes	yes	yes	yes	yes	Yes	yes	yes	yes	yes
Adjusted. R^2	0.0507	0.0515	0.0658	0.026	0.0261	0.0309	0.0187	0.0193	0.018	0.0268	0.0158	0.0181

Note: This table reports the results of OLS regression over the period from 2007 to 2012. The sample consists of 7,727 observations which include 10 deals with board connections out of 62 share-financed deals and 15 deals with board connections out of 233 cash-financed deals. The regression is as follows: $Y_{i,t-1-k} = \alpha + \beta_1(SMA\_WBC_{i,t}) + \beta_2(SMA\_WOBC_{i,t}) + \beta_3(MTB_{i,t-2-k}) + \beta_4(SIZE_{i,t-2-k}) + \beta_5(ROA_{i,t-1-k}) + \beta_6(LEV_{i,t-2-k}) + \beta_7(SEO_{i,t-1-k}) + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t-1-k}$ (Equation 4-3)

$Y_{i,t-1-k}$ is replaced with $ACF_{i,t-1-k}$, $ADEXP_{i,t-1-k}$, $APROD_{i,t-1-k}$ and $ATREM_{i,t-1-k}$. *k* is replaced by 0, 1 and 2 to investigate real earnings management of share-financed acquirers with and without board connections in years *t*-1, *t*-2 and *t*-3. The independent variables are defined in the Appendix.

Table 4-13 presents the real earnings management behaviour of cash-financed deals with and without board connections prior to a merger announcement. The results of Table 4-13 derived from Equation 4-3 shows that the coefficients of $\mathrm{CMA\_WOBC}_{i,t}$ in year *t*-1 are insignificant (-0.011, 0.016, -0.018 and -0.003 for the dependent variables $\mathrm{ACF}_{i,t-1}$, $\mathrm{ADEXP}_{i,t-1}$, $\mathrm{APROD}_{i,t-1}$ and $\mathrm{ATREM}_{i,t-1}$ respectively). Besides, the coefficients of $\mathrm{CMA\_WBC}_{i,t}$ in year *t*-1 are also insignificant (0.066, -0.171, -0.138 and 0.069 for the dependent variables $\mathrm{ACF}_{i,t-1}$, $\mathrm{ADEXP}_{i,t-1}$, $\mathrm{APROD}_{i,t-1}$ and $\mathrm{ATREM}_{i,t-1}$). Similar to year *t*-1, the coefficients of $\mathrm{CMA\_WOBC}_{i,t}$ and $\mathrm{CMA\_WBC}_{i,t}$ in year *t*-2 and year *t*-3 are insignificant. Thus, the evidence is consistent with H4.4. These results indicate that cash-financed acquiring firms with and without board connections engage in real earnings management prior to the merger announcement but to an insignificant degree.

Table 4-13: Abnormal real earnings management of cash-financed acquirers with and without board connections

	ACF			ADEXP			APROD			ATREM		
	Year t-3	Year t-2	Year t-1	Year t-3	Year t-2	Year t-1	Year t-3	Year t-2	Year t-1	Year t-3	Year t-2	Year t-1
Intercept	-0.040	-0.059 **	0.003	0.129 ***	-0.007	-0.098 ***	-0.100 ***	-0.096 ***	-0.056 ***	0.056	-0.076 *	-0.040
t-statistic	*-1.17*	*-2.39*	*0.16*	*2.88*	*-0.18*	*-2.87*	*-3.51*	*-4.05*	*-2.96*	*1.09*	*-1.88*	*-1.17*
$\mathrm{CMA\_WOBC}_{\mathrm{i,t}}$	-0.003	-0.018	-0.011	-0.061	0.015	0.016	0.009	0.011	-0.018	-0.091	-0.022	-0.003
t-statistic	*-0.09*	*-0.78*	*-0.56*	*-1.39*	*0.4*	*0.48*	*0.35*	*0.48*	*-1.04*	*-1.78*	*-0.57*	*-0.09*
$\mathrm{CMA\_WBC}_{\mathrm{i,t}}$	0.069	0.131	0.066	0.015	-0.042	-0.171	-0.138	0.014	0.061	0.062	-0.057	0.069
t-statistic	*0.58*	*1.49*	*0.95*	*0.08*	*-0.26*	*-1.22*	*-1.43*	*0.17*	*0.94*	*0.28*	*-0.33*	*0.58*
$\mathrm{MTB}_{\mathrm{i,t-2-k}}$	0.001	0.000	0.001	-0.005 ***	-0.002	-0.004 ***	-0.004 ***	-0.003 ***	-0.003 ***	-0.004 **	-0.001	0.001
t-statistic	*0.92*	*0.38*	*0.8*	*-3.17*	*-1.5*	*-3.43*	*-4.62*	*-4.07*	*-4.47*	*-2.51*	*-0.99*	*0.92*
$\mathrm{SIZE}_{\mathrm{i,t-2-k}}$	-0.002	0.003 ***	0.000 ***	-0.006 **	-0.006 ***	-0.004 ***	0.007 ***	0.006 ***	0.003 ***	-0.008 **	-0.005 ***	-0.002
t-statistic	*-0.8*	*1.71*	*-0.11*	*-2.1*	*-2.51*	*-1.93*	*3.79*	*4.13*	*2.45*	*-2.5*	*-2.12*	*-0.8*
$\mathrm{ROA}_{\mathrm{i,t-1-k}}$	-0.259 ***	-0.207 ***	-0.171 ***	0.188 ***	0.133 ***	0.127 ***	-0.153 ***	-0.144 ***	-0.111 ***	-0.038	-0.093 ***	-0.259 ***
t-statistic	*-14.09*	*-15.76*	*-16.68*	*7.93*	*6.74*	*7.37*	*-9.49*	*-11*	*-11.02*	*-1.4*	*-4.36*	*-14.09*
$\mathrm{LEV}_{\mathrm{i,t-2-k}}$	0.137 ***	0.084 ***	0.054 ***	0.062 *	0.031	0.056 **	0.012	0.036 *	0.046 ***	0.135 ***	0.075 **	0.137 ***
t-statistic	*4.97*	*4.05*	*3.16*	*1.73*	*0.98*	*1.96*	*0.5*	*1.74*	*2.79*	*3.3*	*2.22*	*4.97*
$\mathrm{SEO}_{\mathrm{i,t-1-k}}$	0.065 ***	0.044 ***	0.050 ***	-0.051 ***	-0.033 **	-0.022 *	0.002	0.008	0.018 **	0.022	0.003	0.065 ***
t-statistic	*5.01*	*4.81*	*6.55*	*-3.04*	*-2.36*	*-1.73*	*0.17*	*0.9*	*2.55*	*1.14*	*0.19*	*5.01*
Year Fixed Effects	*yes*	*Yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*
Industry Fixed Effects	*yes*	*Yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*
Adjusted. R^2	*0.0508*	*0.0518*	*0.0652*	*0.0258*	*0.026*	*0.0311*	*0.0187*	*0.0191*	*0.0182*	*0.0272*	*0.0158*	*0.0508*

Note: This table reports the results of OLS regression over the period from 2007 to 2012. The sample consists of 7,727 observations which include 10 deals with board connections out of 62 share-financed deals and 15 deals with board connections out of 233 cash-financed deals. The regression is as follows: $Y_{i,t-1-k} = \alpha + \beta_1(CMA\_WBC_{i,t}) + \beta_2(CMA\_WOBC_{i,t}) + \beta_3(MTB_{i,t-2-k}) + \beta_4(SIZE_{i,t-2-k}) + \beta_5(ROA_{i,t-1-k}) + \beta_6(LEV_{i,t-2-k}) + \beta_7(SEO_{i,t-1-k}) + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t-1-k}$ (Equation 4-3)

$\mathrm{Y}_{\mathrm{i,t-1-k}}$ is replaced with $\mathrm{ACF}_{\mathrm{i,t-1-k}}$, $\mathrm{ADEXP}_{\mathrm{i,t-1-k}}$, $\mathrm{APROD}_{\mathrm{i,t-1-k}}$ and $\mathrm{ATREM}_{\mathrm{i,t-1-k}}$. *k* is replaced by 0, 1 and 2 to investigate real earnings management of share-financed acquirers with and without board connections in years *t*-1, *t*-2 and *t*-3. The independent variables are defined in the Appendix.

Table 4-14 presents the effect of board connections on real earnings management of share- and cash-financed deals prior to a merger announcement. The results of Table 4-14 are derived from Equation 4-4, which are included both share- and cash-financed acquirer with and without board connection indicator independent variables. Table 4-14 shows that the coefficients of $\mathrm{SMA\_WOBC}_{i,t}$ are positive (0.088 and 0.178 for the dependent variables $\mathrm{ACF}_{i,t-1}$ and $\mathrm{ATREM}_{i,t-1}$ and significant at the 5% level in year t-*1*), while the coefficients of $\mathrm{SMA\_WOBC}_{i,t}$ are insignificant (0.050 with the dependent variable $\mathrm{ADEXP}_{i,t-1}$; -0.030 with the dependent variable $\mathrm{APROD}_{i,t-1}$). Besides, the coefficients of $\mathrm{SMA_WOBC}_{i,t}$when the dependent variable is real earnings management proxies in year *t*-2 and year *t*-3 prior to the merger announcement are insignificant. Besides, the coefficients of $\mathrm{SMA\_WBC}_{i,t}$, $\mathrm{CMA\_WBC}_{i,t}$ and $\mathrm{CMA\_WOBC}_{i,t}$ when the dependent variable is real earnings management proxies in the three years prior to the merger announcement are insignificant. Thus, the evidence is consistent with H4.3 and H4.4. These results indicate that cash-financed acquiring firms with board connections manipulate real earnings activities prior to the merger announcement, but to an insignificant degree, while share-financed acquiring firms without board connections manipulate real earnings activities in the first year prior to the merger announcement and those with board connections do not manipulate real earnings activities prior to the merger announcement.

Table 4-14: Abnormal real earnings management of share- and cash-financed acquirers with and without board connections

	ACF			ADEXP			APROD			ATREM		
	Year *t*-3	Year *t*-2	Year *t*-1	Year *t*-3	Year *t*-2	Year *t*-1	Year *t*-3	Year *t*-2	Year *t*-1	Year *t*-3	Year *t*-2	Year *t*-1
Intercept	-0.039	-0.059 **	0.003	0.127 ***	-0.006	-0.099 ***	-0.100 ***	-0.095 ***	-0.056 ***	0.055	-0.075 *	-0.092 **
t-statistic	*-1.15*	*-2.4*	*0.13*	*2.83*	*-0.15*	*-2.9*	*-3.52*	*-4.02*	*-2.97*	*1.08*	*-1.85*	*-2.55*
$\mathrm{SMA\_WOBC_{i.t}}$	-0.037	-0.016	0.088 **	0.147	0.006	0.050	0.056	-0.054	0.030	0.049	-0.025	0.178 **
t-statistic	*-0.53*	*-0.32*	*2.25*	*1.65*	*0.07*	*0.76*	*0.93*	*-1.15*	*0.83*	*0.48*	*-0.31*	*2.58*
$\mathrm{SMA\_WBC_{i.t}}$	-0.024	0.052	-0.055	0.066	-0.163	0.055	-0.131	-0.050	-0.025	0.042	-0.124	-0.010
t-statistic	*-0.17*	*0.51*	*-0.65*	*0.37*	*-1.07*	*0.39*	*-1.02*	*-0.48*	*-0.29*	*0.2*	*-0.75*	*-0.07*
$\mathrm{CMA\_WOBC_{i.t}}$	-0.003	-0.018	-0.010	-0.060	0.014	0.016	0.010	0.010	-0.018	-0.090 *	-0.023	0.007
t-statistic	*-0.09*	*-0.78*	*-0.53*	*-1.36*	*0.39*	*0.49*	*0.35*	*0.46*	*-1.03*	*-1.78*	*-0.57*	*0.19*
$\mathrm{CMA\_WBC_{i.t}}$	0.068	0.131	0.066	0.016	-0.042	-0.171	-0.138	0.013	0.061	0.062	-0.058	-0.120
t-statistic	*0.57*	*1.49*	*0.95*	*0.08*	*-0.26*	*-1.22*	*-1.43*	*0.16*	*0.94*	*0.28*	*-0.33*	*-0.81*
$\mathrm{MTB_{i,t-2-k}}$	0.001	0.000	0.001	-0.005 ***	-0.002	-0.004 ***	-0.004 ***	-0.003 ***	-0.003 ***	-0.004 **	-0.001	-0.003 **
t-statistic	*0.93*	*0.38*	*0.79*	*-3.21*	*-1.5*	*-3.43*	*-4.64*	*-4.07*	*-4.47*	*-2.52*	*-0.99*	*-2.29*
$\mathrm{SIZE_{i,t-2-k}}$	-0.002	0.003 *	0.000	-0.006 **	-0.006 **	-0.004 *	0.007 ***	0.006 ***	0.003 **	-0.008 **	-0.005 **	-0.007 ***
t-statistic	*-0.82*	*1.71*	*-0.06*	*-2.04*	*-2.52*	*-1.9*	*3.81*	*4.1*	*2.47*	*-2.48*	*-2.13*	*-3.15*
$\mathrm{ROA_{i,t-1-k}}$	-0.259 ***	-0.208 ***	-0.171 ***	0.189 ***	0.134 ***	0.127 ***	-0.152 ***	-0.145 ***	-0.111 ***	-0.038	-0.093 ***	-0.065 ***
t-statistic	*-14.1*	*-15.76*	*-16.65*	*7.98*	*6.75*	*7.38*	*-9.46*	*-11.03*	*-11*	*-1.39*	*-4.36*	*-3.56*
$\mathrm{LEV_{i,t-2-k}}$	0.137 ***	0.084 ***	0.055 ***	0.062 *	0.030	0.057 **	0.011	0.035 *	0.046 ***	0.135 ***	0.075 **	0.078 **
t-statistic	*4.96*	*4.05*	*3.17*	*1.73*	*0.97*	*1.97*	*0.49*	*1.73*	*2.79*	*3.3*	*2.21*	*2.55*
$\mathrm{SEO_{i,t-1-k}}$	0.065 ***	0.045 ***	0.049 ***	-0.051 ***	-0.033 **	-0.023 *	0.002	0.008	0.018 **	0.022	0.003	0.024 *
t-statistic	*5.01*	*4.82*	*6.4*	*-3.05*	*-2.38*	*-1.77*	*0.14*	*0.94*	*2.5*	*1.14*	*0.18*	*1.75*
Year Fixed Effects	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*
Industry Fixed Effects	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*
Adjusted. R^2	*0.0505*	*0.0516*	*0.0657*	*0.026*	*0.0259*	*0.0309*	*0.0187*	*0.0191*	*0.018*	*0.027*	*0.0156*	*0.0179*

Note: This table reports the results of OLS regression over the period from 2007 to 2012. The sample consists of 7,727 observations which include 10 deals with board connections out of 62 share-financed deals and 15 deals with board connections out of 233 cash-financed deals. The regression is as follows: $Y_{i,t-1-k} = \alpha + \beta_1(SMA\_WBC_{i,t}) + \beta_2(SMA\_WOBC_{i,t}) + \beta_3(CMA\_WBC_{i,t}) + \beta_4(CMA\_WOBC_{i,t}) + \beta_5(MTB_{i,t-2-k}) + \beta_6(SIZE_{i,t-2-k}) + \beta_7(ROA_{i,t-1-k}) + \beta_8(LEV_{i,t-2-k}) + \beta_9(SEO_{i,t-1-k}) + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t-1-k}$ (Equation 4-4)

$\mathrm{Y_{i,t-1-k}}$ is replaced with $\mathrm{ACF_{i,t-1-k}}$, $\mathrm{ADEXP_{i,t-1-k}}$, $\mathrm{APROD_{i,t-1-k}}$ and $\mathrm{ATREM_{i,t-1-k}}$. *k* is replaced by 0, 1 and 2 to investigate real earnings management of share-financed acquirers with and without board connections in years *t*-1, *t*-2 and *t*-3. The independent variables are defined in the Appendix.

4.5.4 Propensity score matching: two samples t-test.

Similar to Section 3.5.4, this chapter employs propensity score matching as the third main test of the earnings management of share- and cash-financed acquirers with and without board connections prior to a merger announcement. Previous research has found that propensity score matching can deal with misspecification by using regression frameworks for testing hypotheses (Brown and Pinello 2007; Armstrong et al. 2010). The misspecification is caused by the fundamental differences in firm characteristics among research samples. Following previous research, Burnett et al. (2012) employ propensity score matching to reduce the effects of differences in firm characteristics on the association between suspect accruals and high audit quality. It is clear that differences in firm characteristics could cause endogeneity problems in the research results because those firms involved in M&A activities might have different characteristics from those that are not. Therefore, the study tests two sample t-test to control for such differences in the relevant dimensions between (1) M&A deals sample and (2) the rest of the sample using the propensity score matching method to match the five nearest observations based on ROA or basis characteristics (SIZE, LEV and MTB) of the rest of the sample and share- and cash-financed deals with and without board connections. The sampling process is as described in section 3.5.4. Consequently, I obtain matching samples of 1,770 firm-year observations with 295 M&A deal observations and 1,475 in the firm performance (ROA) control sample and 1,475 in the firm characteristics (SIZE, LEV and MTB) control sample.

In Table 4-15, Panel A shows the difference in mean earnings management of share-financed acquirers with and without board connections and the ROA matched sample. For the share-financed acquirers with board connections sample and the ROA matched sample, the differences in accrual-based earnings management ($\mathrm{ATA\_JM_{i,t-1}}$(0.109), $\mathrm{AWCA\_JM_{i,t-1}}$(0.120), $\mathrm{ATA\_MJM_{i,t-1}}$(0.100) and $\mathrm{AWCA\_MJM_{i,t-1}}$(0.110)) and the different real earnings management ($\mathrm{ACF_{i,t-1}}$(-0.169), $\mathrm{ADEXP_{i,t-1}}$(-0.016), $\mathrm{APROD_{i,t-1}}$(-0.041) and $\mathrm{ATREM_{i,t-1}}$(-0.171)) are mixed and insignificant in year *t*-1, with the exception of $\mathrm{ATA\_JM_{i,t-1}}$ and $\mathrm{AWCA\_JM_{i,t-1}}$. In year *t*-2, the differences in accrual-based earnings management ($\mathrm{ATA\_JM_{i,t-2}}$(0.096), $\mathrm{AWCA\_JM_{i,t-2}}$(0.123) and $\mathrm{AWCA\_MJM_{i,t-1}}$(0.107)) are positive and significant, while the differences in real earnings management proxies are insignificant. In year *t*-3, the differences in accrual-based and real earnings management are mixed and insignificant. For the differences in earnings management between the sample of share-financed acquirers without board connections and the ROA matched sample, the differences in accrual-based earnings management ($\mathrm{ATA\_JM_{i,t-1}}$(0.034), $\mathrm{AWCA\_JM_{i,t-1}}$(0.045), $\mathrm{ATA\_MJM_{i,t-1}}$(0.025) and $\mathrm{AWCA\_JM_{i,t-1}}$(0.034)) and the differences in real earnings management ($\mathrm{ACF_{i,t-1}}$(0.053), $\mathrm{ADEXP_{i,t-1}}$(-0.016), $\mathrm{APROD_{i,t-1}}$(-0.010) and $\mathrm{ATREM_{i,t-1}}$(0.060)) are insignificant in year *t*-1, with the exception of $\mathrm{ACF_{i,t-1}}$ and $\mathrm{ATREM_{i,t-1}}$. In years *t*-2 and *t*-3, the differences in accrual-based earnings management and real earnings management are insignificant.

Panel B in Table 4-15 shows the differences in earnings management for the sample of share-financed acquirers with and without board connections and the matched firm characteristics sample. The differences in accrual-based earnings management ($\mathrm{ATA\_JM_{i,t-1}}$(0.073), $\mathrm{AWCA\_JM_{i,t-1}}$(0.063), $\mathrm{ATA\_MJM_{i,t-1}}$(0.060) and $\mathrm{AWCA\_MJM_{i,t-1}}$(0.050)) and the differences in real earnings management ($\mathrm{ACF_{i,t-1}}$(0.007), $\mathrm{ADEXP_{i,t-1}}$(0.036), $\mathrm{APROD_{i,t-1}}$(0.042) and $\mathrm{ATREM_{i,t-1}}$(0.032)) are positive but insignificant in year *t*-1, with the exception of $\mathrm{ATA\_JM_{i,t-1}}$ and $\mathrm{ATA\_MJM_{i,t-1}}$. In year *t*-2, the differences in accrual-based earnings management ($\mathrm{ATA\_JM_{i,t-2}}$(0.044) and $\mathrm{AWCA\_JM_{i,t-2}}$(0.036)) are positive and significant, while the differences in accrual-based earnings management ($\mathrm{ATA\_MJM_{i,t-2}}$ and $\mathrm{AWCA\_JM_{i,t-2}}$) and the difference in real earnings management proxies are insignificant. In year *t*-3, the differences in accrual-based and real earnings management are mixes and insignificant. For the differences in earnings management between the sample of share-financed acquirers without board connections and the firm characteristics matched sample, $\mathrm{ACF_{i,t-1}}$(0.042) and $\mathrm{ATREM_{i,t-1}}$(0.219) in year *t*-1 are positive and significant, while the differences in accrual-based earnings management in the three years prior to the merger announcement and the differences in real earnings management in years *t*-2 and *t*-3 are insignificant.

Table 4-16 show the differences in earnings management between the sample of cash-financed acquirers with and without board connections and the ROA matched sample in Panel A and the firm characteristics matched sample in Panel B. However, the differences in accrual-based earnings and real earnings management are insignificant in the three years prior to the merger announcement for both the ROA matched sample and the firm characteristics matched sample.

The results of Table 4-15 and Table 4-16 show no evidence that cash-financed acquirers with and without board connections manipulate their accruals or real earnings activities prior to the merger announcement. However, consistent with H4.1, H4.2, H4.3 and H4.4, share-financed acquirers with board connections inflate accrual-based earnings in the first and second years prior to the merger announcement, while share-financed acquirers without board connections do manipulate real earnings activities prior to the merger announcement in the first year.

Table 4-15: Differences in earnings management between the sample of share-financed acquirers with and without board connections and the matched samples

Earnings management proxies	With board connections			Without board connections		
	Year t-3	Year t-2	Year t-1	Year t-3	Year t-2	Year t-1
A. ROA matched sample						
$\mathrm{ATA\_JM}_{i,t-1-k}$	0.007	0.096 *	0.109 *	0.024	-0.024	0.034
$\mathrm{AWCA\_JM}_{i,t-1-k}$	0.019	0.123 **	0.120 *	0.023	-0.020	0.045
$\mathrm{ATA\_MJM}_{i,t-1-k}$	-0.022	0.079	0.100	0.028	-0.021	0.025
$\mathrm{AWCA\_MJM}_{i,t-1-k}$	-0.006	0.107 *	0.110	0.024	-0.016	0.034
$\mathrm{ACF}_{i,t-1-k}$	-0.050	-0.009	-0.169	0.091	-0.055	0.053 *
$\mathrm{ADEXP}_{i,t-1-k}$	0.107	-0.022	-0.016	-0.095	-0.109	-0.016
$\mathrm{APROD}_{i,t-1-k}$	-0.062	-0.036	-0.041	0.098	-0.069	-0.010
$\mathrm{ATREM}_{i,t-1-k}$	0.064	-0.035	-0.171	-0.014	-0.105	0.060 **
B. Firm characteristics matched sample						
$\mathrm{ATA\_JM}_{i,t-1-k}$	-0.018	0.044 *	0.073 *	-0.013	0.013	0.035
$\mathrm{AWCA\_JM}_{i,t-1-k}$	-0.033	0.036 *	0.063	-0.013	0.019	0.038
$\mathrm{ATA\_MJM}_{i,t-1-k}$	-0.039	0.037	0.060 *	-0.009	0.010	0.032
$\mathrm{AWCA\_MJM}_{i,t-1-k}$	-0.053	0.029	0.050	-0.010	0.014	0.033
$\mathrm{ACF}_{i,t-1-k}$	-0.016	0.074	0.007	0.062	-0.012	0.042 *
$\mathrm{ADEXP}_{i,t-1-k}$	0.055	0.015	0.036	0.081	-0.041	0.104
$\mathrm{APROD}_{i,t-1-k}$	-0.027	-0.142	0.042	0.006	-0.061	0.095
$\mathrm{ATREM}_{i,t-1-k}$	0.018	0.070	0.032	0.123	-0.009	0.219 **

Note: The table reports the difference in mean of earnings management using propensity score matching. For share-financed deals with board connections, the sample consists of 60 observations which include the treatment and control samples. The treatment sample consists of 10 share-financed deals with board connections. The control sample is the rest of sample with ROA or the characteristics matching variables. The control sample consists 50 observations which match 10 deals with board connections based on the top 5 nearest ROA or firm's basic characteristics (SIZE, LEV and MTB). For share-financed deals without board connections, the sample consists of 312 observations which include the treatment and control samples. The treatment sample consists of 52 share-financed deals without board connections. The control sample is the rest of sample with ROA or the characteristics matching variables. The control sample consists 260 observations which match 52 deals without board connections based on the top 5 nearest ROA or firm's basic characteristics (SIZE, LEV and MTB). Year *t-1*, year *t-2* and year *t-3* are the first, second and third years with an earnings release preceding the announcement of the deal. Significance is based on t-tests for the differences in mean. ***, ** and * indicate 1%, 5% and 10% levels of significance respectively. Please see the Appendix for variable descriptions.

Table 4-16: Differences in earnings management between the sample of cash-financed acquirers with and without board connections and the matched samples

Earnings management proxies	With board connections			Without board connections		
	Year t-3	Year t-2	Year t-1	Year t-3	Year t-2	Year t-1
A. ROA matched sample						
$\mathrm{ATA\_JM}_{i,t-1-k}$	0.011	0.047	-0.047	0.004	-0.003	0.019
$\mathrm{AWCA\_JM}_{i,t-1-k}$	0.010	0.041	-0.057	0.001	-0.005	0.018
$\mathrm{ATA\_MJM}_{i,t-1-k}$	0.025	0.045	-0.050	0.002	-0.001	0.020
$\mathrm{AWCA\_MJM}_{i,t-1-k}$	0.024	0.035	-0.058	-0.001	-0.002	0.020
$\mathrm{ACF}_{i,t-1-k}$	-0.020	0.122	0.018	-0.033	-0.068	-0.021
$\mathrm{ADEXP}_{i,t-1-k}$	-0.176	-0.024	-0.050	-0.027	0.045	0.017
$\mathrm{APROD}_{i,t-1-k}$	-0.101	0.096	0.190	-0.007	0.013	-0.017
$\mathrm{ATREM}_{i,t-1-k}$	-0.263	-0.006	-0.024	-0.082	-0.021	-0.010
B. Firm characteristics matched sample						
$\mathrm{ATA\_JM}_{i,t-1-k}$	0.025	0.054	0.041	0.013	-0.017	0.011
$\mathrm{AWCA\_JM}_{i,t-1-k}$	0.021	0.049	0.032	0.010	-0.022	0.008
$\mathrm{ATA\_MJM}_{i,t-1-k}$	0.028	0.054	0.050	0.013	-0.012	0.014
$\mathrm{AWCA\_MJM}_{i,t-1-k}$	0.025	0.050	0.041	0.009	-0.016	0.011
$\mathrm{ACF}_{i,t-1-k}$	0.217	0.134	0.028	-0.009	-0.059	-0.021
$\mathrm{ADEXP}_{i,t-1-k}$	-0.382	-0.053	-0.131	-0.017	0.035	-0.008
$\mathrm{APROD}_{i,t-1-k}$	-0.114	0.064	-0.012	-0.039	-0.024	-0.033
$\mathrm{ATREM}_{i,t-1-k}$	-0.466	0.014	-0.100	-0.074	-0.036	-0.041

Note: The table reports the difference in mean of earnings management using the propensity score matching. For cash-financed deals with board connections, the sample consists of 90 observations which include the treatment and control samples. The treatment sample consists of 15 cash-financed deals with board connections. The control sample is the rest of sample with ROA or the characteristics matching variables. The control sample consists 75 observations which match 15 deals with board connections based on the top 5 nearest ROA or firm's basic characteristics (SIZE, LEV and MTB). For cash-financed deals without board connections, the sample consists of 1308 observations which include the treatment and control samples. The treatment sample consists of 218 share-financed deals without board connections. The control sample is the rest of sample with ROA or the characteristics matching variables. The control sample consists 1,090 observations which match 218 deals without board connections based on the top 5 nearest ROA or firm's basic characteristics (SIZE, LEV and MTB). Year *t*-1, year *t*-2 and year *t*-3 are the first, second and third years with an earnings release preceding the announcement of the deal. Significance is based on t-tests for the differences in mean. ***, ** and * indicate 1%, 5%, and 10% levels of significance respectively. Please see the Appendix for variable descriptions.

4.6 ROBUSTNESS CHECKS

4.6.1 The performance control approach is employed as a first robustness test in estimating abnormal accruals and real earnings activities to control for the effect of firm performance (Kothari et al. 2005).**Accrual earnings management - performance control approach**

As described in section 3.6.2 in Chapter 3, to control for firm performance, ROA is added as a regressor in the Jones and modified Jones models to control for firm performance. The four abnormal accruals proxies estimated using the performance control approach are $\mathrm{ATA\_JM\_PC}_{\mathrm{i,t-1-k}}$, $\mathrm{AWCA\_JM\_PC}_{\mathrm{i,t-1-k}}$, $\mathrm{ATA\_MJM\_PC}_{\mathrm{i,t-1-k}}$, and $\mathrm{AWCA\_MJM\_PC}_{\mathrm{i,t-1-k}}$. Regressions are then run excluding the ROA control variables to investigate whether share-financed acquirers and cash-financed acquirers with board connections inflate accruals earnings considerably before a merger announcement because the ROA variable is included in the Jones and modified Jones models in the performance control approach. The regressions are as follows:

Equation 4-5

$$Y_{i,t-1-k} = \alpha + \beta_1(XMA\_WOBC_{i,t}) + \beta_2(XMA\_WBC_{i,t}) + \beta_3(MTB_{i,t-2-k}) + \beta_4(SIZE_{i,t-2-k}) + \beta_5(LEV_{i,t-2-k}) + \beta_6(NOA_{i,t-2-k}) + \beta_8(SEO_{i,t-1-k}) + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t}$$

Equation 4-6

$$
\begin{aligned}
Y_{i,t-1-k} = \alpha &+ \beta_1(SMA\_WOBC_{i,t}) + \beta_2(SMA\_WBC_{i,t}) + \beta_3(CMA\_WOBC_{i,t}) \\
&+ \beta_4(CMA\_WBC_{i,t}) + \beta_5(MTB_{i,t-2-k}) + \beta_6(SIZE_{i,t-2-k}) \\
&+ \beta_7(LEV_{i,t-2-k}) + \beta_8(NOA_{i,t-2-k}) + \beta_9(SEO_{i,t-1-k}) \\
&+ Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t}
\end{aligned}
$$

Table 4-17 presents the accrual-based earnings management behaviour estimated by the Jones model under the performance control approach for share-financed acquiring firms prior to a merger announcement. The results derived from Equation 4-5, where $\mathrm{XMA\_WBC_{i,t}}$ and $\mathrm{XMA\_WOBC_{i,t}}$ replaced by $\mathrm{SMA\_WBC_{i,t}}$ and $\mathrm{SMA\_WOBC_{i,t}}$, show that in years *t*-1 and *t*-2 the coefficients of $\mathrm{SMA\_WBC_{i,t}}$ are positive (0.104 and 0.081 for the dependent variables $\mathrm{ATA\_JM\_PC_{i,t-1}}$ and $\mathrm{ATA\_JM\_PC_{i,t-2}}$, and significant at the 1% and 5% levels respectively; 0.100 and 0.081 for the dependent variables $\mathrm{AWCA\_JM\_PC_{i,t-1}}$ and $\mathrm{AWCA\_JM\_PC_{i,t-2}}$, and significant at the 5% and 10% levels respectively). The coefficients of $\mathrm{SMA\_WOBC_{i,t}}$ are positive and insignificant in year *t*-1 and negative but insignificant in year *t*-2 (0.017 and -0.023 for the dependent variables $\mathrm{ATA\_JM\_PC_{i,t-1}}$ and $\mathrm{ATA\_JM\_PC_{i,t-2}}$; 0.016 and -0.026 for the dependent variables $\mathrm{AWCA\_JM\_PC_{i,t-1}}$ and $\mathrm{AWCA\_JM\_PC_{i,t-2}}$). In year *t*-3, the coefficients of $\mathrm{SMA\_WOBC_{i,t}}$ and $\mathrm{SMA\_WBC_{i,t}}$ with the dependent variables $\mathrm{ATA\_JM\_PC_{i,t-3}}$ and $\mathrm{AWCA\_JM\_PC_{i,t-3}}$ are insignificant prior to the merger announcement.

Table 4-18 presents the accrual-based earnings management behaviour estimated by the modified Jones model under the performance control approach for share-financed acquiring firms prior to a merger announcement. The results derived from Equation 4-5, where $\mathrm{XMA\_WBC_{i,t}}$ and $\mathrm{XMA\_WOBC_{i,t}}$ replaced by $\mathrm{SMA\_WBC_{i,t}}$ and $\mathrm{SMA\_WOBC_{i,t}}$, show that in years *t*-1 and *t*-2 the coefficients of

$\mathrm{SMA\_WBC_{i,t}}$ are positive (0.099 and 0.080 for the dependent variables $\mathrm{ATA\_MJM\_PC_{i,t-1}}$ and $\mathrm{ATA\_MJM\_PC_{i,t-2}}$, and significant at the 5% and 10% levels respectively; 0.095 and 0.079 for the dependent variables $\mathrm{AWCA\_MJM\_PC_{i,t-1}}$ and $\mathrm{AWCA\_MJM\_PC_{i,t-2}}$, and significant at the 5% and 10% levels respectively). The coefficients of $\mathrm{SMA\_WOBC_{i,t}}$ are positive but insignificant in year *t*-1 and negative but insignificant in year *t*-2 (0.010 and -0.028 for the dependent variables $\mathrm{ATA\_JM\_PC_{i,t-1}}$ and $\mathrm{ATA\_JM\_PC_{i,t-2}}$; 0.009 and -0.032 for the dependent variables $\mathrm{AWCA\_JM\_PC_{i,t-1}}$ and $\mathrm{AWCA\_JM\_PC_{i,t-2}}$). In year *t*-3, consistent with the results in Table 4-17, the coefficients of $\mathrm{SMA\_WOBC_{i,t}}$ and $\mathrm{SMA\_WBC_{i,t}}$ with the dependent variables $\mathrm{ATA\_JM\_PC_{i,t-1-k}}$ and $\mathrm{AWCA\_JM\_PC_{i,t-1-k}}$ are insignificant in the three years prior to the merger announcement.

These results in Table 4-17 and Table 4-18 imply that there are no significant differences from the main findings when abnormal accruals are estimated under the performance control approach. Share-financed acquirers with board connections inflate accruals considerably prior to the merger announcement, i.e. two years prior, while share-financed acquirers without board connections do not significantly inflate accruals prior to the merger announcement.

Table 4-17: Abnormal total and working capital accruals estimated by the Jones model with the intercept using the performance control approach of share-financed acquirers with and without board connections

	ATA_JM						AWCA_JM					
	Year *t*-3		Year *t*-2		Year *t*-1		Year *t*-3		Year *t*-2		Year *t*-1	
Intercept	0.015		0.009		0.014		0.019	*	0.016		0.021	**
t-statistic	*1.52*		*0.97*		*1.44*		*1.74*		*1.5*		*2.07*	
$\mathrm{SMA\_WOBC}_{\mathrm{i.t}}$	0.004		-0.023		0.017		0.005		-0.026		0.016	
t-statistic	*0.2*		*-1.15*		*0.94*		*0.22*		*-1.23*		*0.77*	
$\mathrm{SMA\_WBC}_{\mathrm{i.t}}$	-0.018		0.081	**	0.104	***	-0.020		0.081	*	0.100	**
t-statistic	*-0.42*		*1.97*		*2.58*		*-0.43*		*1.81*		*2.27*	
$\mathrm{MTB}_{\mathrm{i.t-2-k}}$	-0.001	*	0.000		0.000		-0.001	*	0.000		0.000	
t-statistic	*-1.65*		*0.43*		*-0.27*		*-1.68*		*0.24*		*-0.79*	
$\mathrm{SIZE}_{\mathrm{i.t-2-k}}$	0.000		0.000	***	0.000	***	-0.001	***	0.000	***	0.000	***
t-statistic	*-0.77*		*0.63*		*0.19*		*-0.81*		*0.09*		*-0.32*	
$\mathrm{LEV}_{\mathrm{i.t-2-k}}$	0.019	**	0.006		0.005		0.011		0.004		0.000	
t-statistic	*2.26*		*0.76*		*0.57*		*1.18*		*0.38*		*0.04*	
$\mathrm{NOA}_{\mathrm{i.t-2-k}}$	-0.021	***	-0.020	***	-0.024	***	-0.022	***	-0.023	***	-0.027	***
t-statistic	*-3.2*		*-3.19*		*-3.85*		*-3.11*		*-3.27*		*-3.93*	
$\mathrm{SEO}_{\mathrm{i.t-1-k}}$	0.000		-0.018		-0.015		-0.021		-0.023		-0.020	
t-statistic	*0*		*-5.04*		*-4.18*		*-5.04*		*-5.68*		*-5.15*	
Year Fixed Effects	*yes*		*yes*		*yes*		*yes*		*yes*		*yes*	
Industry Fixed Effects	*yes*		*yes*		*yes*		*yes*		*yes*		*yes*	
Adjusted. R^2	*-0.0005*		*0.001*		*-0.0005*		*0.1305*		*0.0019*		*0.0007*	

Note: This table reports the results of OLS regression over the period from 2007 to 2012. The sample consists of 7,727 observations which include 10 deals with board connections out of 62 share-financed deals and 15 deals with board connections out of 233 cash-financed deals. The regression is as follows: $Y_{i,t-1-k} = \alpha + \beta_1(SMA\_WOBC_{i,t}) + \beta_2(SMA\_WBC_{i,t}) + \beta_3(MTB_{i,t-2-k}) + \beta_4(SIZE_{i,t-2-k}) + \beta_5(LEV_{i,t-2-k}) + \beta_6(NOA_{i,t-2-k}) + \beta_8(SEO_{i,t-1-k}) + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t}$ (Equation 4-5)

$\mathrm{Y}_{\mathrm{i,t-1-k}}$ is replaced with $\mathrm{ATA\_JM\_PC}_{\mathrm{i,t-1-k}}$, and $\mathrm{AWCA\_JM\_PC}_{\mathrm{i,t-1-k}}$. *k* is replaced by 0, 1 and 2 to investigate accrual-based earnings management of share-financed acquirers with and without board connections in years *t*-1, *t*-2 and *t*-3. The independent variables are defined in the Appendix.

Table 4-18: Abnormal total and working capital accruals estimated by the modified Jones model with the intercept using the performance control approach of share-financed acquirers with and without board connections

	ATA_MJM						AWCA_MJM					
	Year *t*-3		Year *t*-2		Year *t*-1		Year *t*-3		Year *t*-2		Year *t*-1	
Intercept	0.009		0.004		0.008		0.014		0.010		0.016	
t-statistic	*0.91*		*0.44*		*0.87*		*1.29*		*0.97*		*1.6*	
$SMA\_WOBC_{i.t}$	0.011		-0.028		0.010		0.011		-0.032		0.009	
t-statistic	*0.52*		*-1.41*		*0.56*		*0.48*		*-1.51*		*0.44*	
$SMA\_WBC_{i.t}$	-0.025		0.080	*	0.099	**	-0.026		0.079	*	0.095	**
t-statistic	*-0.58*		*1.93*		*2.45*		*-0.56*		*1.76*		*2.16*	
$MTB_{i.t-2-k}$	-0.001	*	0.000		0.000		-0.001	*	0.000		0.000	
t-statistic	*-1.76*		*0.6*		*-0.24*		*-1.81*		*0.35*		*-0.89*	
$SIZE_{i.t-2-k}$	0.000		0.001	***	0.000	***	0.000	***	0.000	***	0.000	***
t-statistic	*-0.34*		*0.97*		*0.69*		*-0.5*		*0.43*		*0.09*	
$LEV_{i.t-2-k}$	0.015	*	0.004		0.004		0.008		0.001		0.000	
t-statistic	*1.79*		*0.54*		*0.48*		*0.82*		*0.15*		*0.02*	
$NOA_{i.t-2-k}$	-0.018	***	-0.019	***	-0.022	***	-0.019	***	-0.020	***	-0.025	***
t-statistic	*-2.68*		*-2.91*		*-3.56*		*-2.6*		*-2.89*		*-3.69*	
$SEO_{i.t-1-k}$	-0.013		-0.015		-0.013		-0.019		-0.020		-0.019	
t-statistic	*-3.4*		*-4.19*		*-3.65*		*-4.42*		*-4.98*		*-4.76*	
Year Fixed Effects	*yes*		*yes*		*yes*		*yes*		*yes*		*yes*	
Industry Fixed Effects	*yes*		*yes*		*yes*		*yes*		*yes*		*yes*	
Adjusted. R^2	*-0.0018*		*-0.0001*		*-0.0014*		*-0.0005*		*0.0008*		*0*	

Note: This table reports the results of OLS regression over the period from 2007 to 2012. The sample consists of 7,727 observations which include 10 deals with board connections out of 62 share-financed deals and 15 deals with board connections out of 233 cash-financed deals. The regression is as follows: $Y_{i,t-1-k} = \alpha + \beta_1(SMA\_WOBC_{i,t}) + \beta_2(SMA\_WBC_{i,t}) + \beta_3(MTB_{i,t-2-k}) + \beta_4(SIZE_{i,t-2-k}) + \beta_5(LEV_{i,t-2-k}) + \beta_6(NOA_{i,t-2-k}) + \beta_8(SEO_{i,t-1-k}) + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t}$ (Equation 4-5)

$Y_{i,t-1-k}$ is replaced with $ATA\_MJM\_PC_{i,t-1-k}$, and $AWCA\_MJM\_PC_{i,t-1-k}$. *k* is replaced by 0, 1 and 2 to investigate accrual-based earnings management of share-financed acquirers with and without board connections in years *t*-1, *t*-2 and *t*-3. The independent variables are defined in the Appendix.

Table 4-19 and Table 4-20 present the accrual-based earnings management behaviour estimated by the Jones model under the performance control approach of cash-financed acquiring firms with and without board connections prior to a merger announcement. The results derived from Equation 4-5, where $\mathrm{XMA\_WBC}_{i,t}$ and $\mathrm{XMA\_WOBC}_{i,t}$ replaced by $\mathrm{CMA\_WBC}_{i,t}$ and $\mathrm{CMA\_WOBC}_{i,t}$, show that the coefficients of $\mathrm{CMA\_WBC}_{i,t}$ and $\mathrm{CMA\_WOBC}_{i,t}$, when the dependent variables are abnormal total and working capital accruals estimated by the Jones model ($\mathrm{ATA\_JM\_PC}_{i,t-1-k}$ and $\mathrm{AWCA\_JM\_PC}_{i,t-1-k}$) and abnormal total and working capital accruals estimated by the modified Jones model ($\mathrm{ATA\_MJM\_PC}_{i,t-1-k}$ and $\mathrm{AWCA\_MJM\_PC}_{i,t-1-k}$), are insignificant in the three years prior to the merger announcement. These results in Table 4-19 and Table 4-20 indicate that cash-financed acquirers with and without board connections inflate accruals in insignificant level prior to the merger announcement, which is no significantly different to the main finding when abnormal accruals estimated using the performance control approach.

Table 4-19: Abnormal total and working capital accruals estimated by the Jones model with the intercept using the performance control approach of cash-financed acquirers with and without board connections

	ATA_JM						AWCA_JM					
	Year *t*-3		Year *t*-2		Year *t*-1		Year *t*-3		Year *t*-2		Year *t*-1	
Intercept	0.016		0.010		0.014		0.019	*	0.016		0.022	**
t-statistic	*1.52*		*0.98*		*1.53*		*1.75*		*1.51*		*2.14*	
$CMA\_WBC_{i.t}$	0.005		-0.002		0.007		0.003		-0.003		0.006	
t-statistic	*0.55*		*-0.17*		*0.79*		*0.29*		*-0.25*		*0.61*	
$CMA\_WOBC_{i.t}$	0.049		0.028		0.022		0.047		0.032		0.014	
t-statistic	*1.35*		*0.79*		*0.66*		*1.21*		*0.84*		*0.39*	
$MTB_{i.t-2-k}$	-0.001		0.000		0.000		-0.001	*	0.000		0.000	
t-statistic	*-1.64*		*0.42*		*-0.27*		*-1.67*		*0.24*		*-0.8*	
$SIZE_{i.t-2-k}$	-0.001		0.000	***	0.000	***	-0.001	***	0.000	***	0.000	***
t-statistic	*-0.82*		*0.62*		*0.09*		*-0.85*		*0.08*		*-0.4*	
$LEV_{i.t-2-k}$	0.019	**	0.006		0.005		0.011		0.003		0.000	
t-statistic	*2.29*		*0.75*		*0.56*		*1.21*		*0.37*		*0.02*	
$NOA_{i.t-2-k}$	-0.021	***	-0.020	***	-0.024	***	-0.022	***	-0.023	***	-0.027	***
t-statistic	*-3.23*		*-3.16*		*-3.87*		*-3.14*		*-3.25*		*-3.95*	
$SEO_{i.t-1-k}$	-0.016		-0.019		-0.015		-0.021		-0.023		-0.020	
t-statistic	*-4.23*		*-5.12*		*-4.11*		*-5.02*		*-5.75*		*-5.1*	
Year Fixed Effects	*yes*		*yes*		*yes*		*Yes*		*yes*		*yes*	
Industry Fixed Effects	*yes*		*yes*		*yes*		*Yes*		*yes*		*yes*	
Adjusted. R^2	*0.00268*		*0.00201*		*0.00329*		*0.00398*		*0.00312*		*0.00385*	

Note: This table reports the results of OLS regression over the period from 2007 to 2012. The sample consists of 7,727 observations which include 10 deals with board connections out of 62 share-financed deals and 15 deals with board connections out of 233 cash-financed deals. The regression is as follows: $Y_{i,t-1-k} = \alpha + \beta_1(CMA\_WOBC_{i,t}) + \beta_2(CMA\_WBC_{i,t}) + \beta_3(MTB_{i,t-2-k}) + \beta_4(SIZE_{i,t-2-k}) + \beta_5(LEV_{i,t-2-k}) + \beta_6(NOA_{i,t-2-k}) + \beta_8(SEO_{i,t-1-k}) + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t}$ (Equation 4-5)

$Y_{i,t-1-k}$ is replaced with $ATA\_JM\_PC_{i,t-1-k}$, and $AWCA\_JM\_PC_{i,t-1-k}$. *k* is replaced by 0, 1 and 2 to investigate accrual-based earnings management of cash-financed acquirers with and without board connections in years *t*-1, *t*-2 and *t*-3. The independent variables are defined in the Appendix.

Table 4-20: Abnormal total and working capital accruals estimated by the modified Jones model with the intercept using the performance control approach of cash-financed acquirers with and without board connections

	ATA_MJM						AWCA_MJM					
	Year *t*-3		Year *t*-2		Year *t*-1		Year *t*-3		Year *t*-2		Year *t*-1	
Intercept	-0.014		-0.013		0.006		-0.011		-0.008		0.012	
t-statistic	*-1.3*		*-1.33*		*0.58*		*-0.95*		*-0.78*		*1.11*	
$CMA\_WBC_{i.t}$	0.007		0.004		0.011		0.006		0.003		0.009	
t-statistic	*0.67*		*0.46*		*1.21*		*0.51*		*0.32*		*0.94*	
$CMA\_WOBC_{i.t}$	0.053		0.021		0.026		0.046		0.023		0.016	
t-statistic	*1.42*		*0.59*		*0.77*		*1.12*		*0.58*		*0.44*	
$MTB_{i.t-2-k}$	0.000		0.000		0.000		-0.001		0.000		0.000	
t-statistic	*-1.36*		*0.79*		*-0.22*		*-1.38*		*0.61*		*-0.74*	
$SIZE_{i.t-2-k}$	-0.001		0.000	***	0.000	***	-0.001	***	0.000	***	-0.001	***
t-statistic	*-0.78*		*0.7*		*0.24*		*-1.56*		*-0.4*		*-0.85*	
$LEV_{i.t-2-k}$	0.032	***	0.022	**	0.023	***	0.032	***	0.026	***	0.027	***
t-statistic	*3.69*		*2.57*		*2.75*		*3.38*		*2.79*		*2.92*	
$NOA_{i.t-2-k}$	-0.022	***	-0.022	***	-0.028	***	-0.021	***	-0.023	***	-0.031	***
t-statistic	*-3.21*		*-3.38*		*-4.36*		*-2.82*		*-3.25*		*-4.42*	
$SEO_{i.t-1-k}$	-0.012		-0.015		-0.011		-0.016		-0.019		-0.016	
t-statistic	*-2.96*		*-4*		*-3.1*		*-3.73*		*-4.51*		*-4.07*	
Year Fixed Effects	*yes*		*yes*		*yes*		*Yes*		*yes*		*yes*	
Industry Fixed Effects	*yes*		*yes*		*yes*		*Yes*		*yes*		*yes*	
Adjusted. R^2	*0.0089*		*0.0122*		*0.0121*		*0.0129*		*0.0183*		*0.0205*	

Note: This table reports the results of OLS regression over the period from 2007 to 2012. The sample consists of 7,727 observations which include 10 deals with board connections out of 62 share-financed deals and 15 deals with board connections out of 233 cash-financed deals. The regression is as follows: $Y_{i,t-1-k} = \alpha + \beta_1(CMA\_WOBC_{i,t}) + \beta_2(CMA\_WBC_{i,t}) + \beta_3(MTB_{i,t-2-k}) + \beta_4(SIZE_{i,t-2-k}) + \beta_5(LEV_{i,t-2-k}) + \beta_6(NOA_{i,t-2-k}) + \beta_8(SEO_{i,t-1-k}) + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t}$ (Equation 4-5)

$Y_{i,t-1-k}$ is replaced with $ATA\_MJM\_PC_{i,t-1-k}$, and $AWCA\_MJM\_PC_{i,t-1-k}$. *k* is replaced by 0, 1 and 2 to investigate accrual-based earnings management of cash-financed acquirers with and without board connections in years *t*-1, *t*-2 and *t*-3. The independent variables are defined in the Appendix.

Under using alternative regression (Equation 4-6) which includes both share- and cash-financed acquirers with and without board connections indicator variables ($\mathrm{SMA\_WBC}_{i,t}$, $\mathrm{SMA\_WOBC}_{i,t}$, $\mathrm{CMA\_WBC}_{i,t}$ and $\mathrm{CMA\_WOBC}_{i,t}$), Table 4-21 and Table 4-22 present the accrual-based earnings management behaviour using the performance control approach of share- and cash-financed acquiring firms prior to the merger announcement. The results of Table 4-21 derived from Equation 4-6 show that in years *t*-1 and *t*-2 the coefficients of $\mathrm{SMA\_WBC}_{i,t}$ are positive (0.105 and 0.081 for the dependent variables $\mathrm{ATA\_JM\_PC}_{i,t-1}$ and $\mathrm{ATA\_JM\_PC}_{i,t-2}$, and significant at the 1% and 5% levels respectively; 0.101 and 0.081 for the dependent variables $\mathrm{AWCA\_JM\_PC}_{i,t-1}$ and $\mathrm{AWCA\_JM\_PC}_{i,t-2}$, and significant at the 5% and 10% levels respectively). In year *t*-3, the coefficients of $\mathrm{SMA\_WBC}_{i,t}$ when the dependent variables are $\mathrm{ATA\_JM\_PC}_{i,t-3}$ and $\mathrm{AWCA\_JM\_PC}_{i,t-3}$ are insignificant prior to the merger announcement. Similar to Table 4-21, Table 4-22 shows that in year *t*-1 and *t*-2 the coefficients of $\mathrm{SMA\_WBC}_{i,t}$ are positive (0.099 and 0.080 for the dependent variables $\mathrm{ATA\_MJM\_PC}_{i,t-1}$ and $\mathrm{ATA\_MJM\_PC}_{i,t-2}$, and significant at the 5% and 10% levels respectively; 0.095 and 0.079 for the dependent variables $\mathrm{AWCA\_MJM\_PC}_{i,t-1}$ and $\mathrm{AWCA\_MJM\_PC}_{i,t-2}$, and significant at the 5% and 10% levels respectively). In year *t*-3, the coefficients of $\mathrm{SMA\_WBC}_{i,t}$ when the dependent variables are $\mathrm{ATA\_MJM\_PC}_{i,t-3}$ and $\mathrm{AWCA\_MJM\_PC}_{i,t-3}$ are insignificant prior to the merger announcement. Table 4-21 and Table 4-22 also present that the coefficient of $\mathrm{SMA\_WOBC}_{i,t}$, $\mathrm{CMA\_WBC}_{i,t}$ and $\mathrm{CMA\_WOBC}_{i,t}$ when the dependent variables are $\mathrm{ATA\_JM\_PC}_{i,t-1-k}$, $\mathrm{AWCA\_JM\_PC}_{i,t-1-k}$, $\mathrm{ATA\_MJM\_PC}_{i,t-1-k}$, $\mathrm{AWCA\_MJM\_PC}_{i,t-1-k}$, are insignificant. Hence, the main findings of this chapter are not qualitatively changed after controlling firm performance.

Table 4-21: Abnormal total and working capital accruals estimated by the Jones model with intercept using the performance control approach of share- and cash-financed acquirers with and without board connections

	ATA_JM						AWCA_JM					
	Year *t*-3		Year *t*-2		Year *t*-1		Year *t*-3		Year *t*-2		Year *t*-1	
Intercept	0.015		0.010		0.014		0.019	*	0.016		0.021	**
t-statistic	*1.52*		*0.98*		*1.44*		*1.74*		*1.51*		*2.07*	
$\mathrm{SMA\_WBC}_{i.t}$	0.004		-0.023		0.018		0.005		-0.026		0.016	
t-statistic	*0.21*		*-1.15*		*0.95*		*0.23*		*-1.23*		*0.78*	
$\mathrm{SMA\_WOBC}_{i.t}$	-0.018		0.081	**	0.105	***	-0.020		0.081	*	0.101	**
t-statistic	*-0.41*		*1.97*		*2.59*		*-0.43*		*1.81*		*2.28*	
$\mathrm{CMA\_WBC}_{i.t}$	0.005		-0.002		0.007		0.003		-0.003		0.006	
t-statistic	*0.55*		*-0.18*		*0.82*		*0.29*		*-0.26*		*0.64*	
$\mathrm{CMA\_WOBC}_{i.t}$	0.049		0.027		0.022		0.047		0.032		0.014	
t-statistic	*1.35*		*0.79*		*0.67*		*1.21*		*0.84*		*0.4*	
$\mathrm{MTB}_{i.t-2-k}$	-0.001		0.000		0.000		-0.001	*	0.000		0.000	
t-statistic	*-1.64*		*0.43*		*-0.27*		*-1.67*		*0.24*		*-0.79*	
$\mathrm{SIZE}_{i.t-2-k}$	-0.001		0.000		0.000		-0.001		0.000		0.000	
t-statistic	*-0.81*		*0.61*		*0.15*		*-0.85*		*0.07*		*-0.35*	
$\mathrm{LEV}_{i.t-2-k}$	0.019	**	0.006		0.005		0.011		0.004		0.000	
t-statistic	*2.28*		*0.77*		*0.59*		*1.2*		*0.39*		*0.05*	
$\mathrm{NOA}_{i.t-2-k}$	-0.021	***	-0.020	***	-0.024	***	-0.022	***	-0.023	***	-0.027	***
t-statistic	*-3.21*		*-3.19*		*-3.85*		*-3.12*		*-3.28*		*-3.93*	
$\mathrm{SEO}_{i.t-1-k}$	-0.017		-0.018		-0.015		-0.021		-0.023		-0.020	
t-statistic	*-4.24*		*-5.04*		*-4.15*		*-5.03*		*-5.67*		*-5.12*	
Year Fixed Effects	*yes*		*yes*		*yes*		*yes*		*yes*		*yes*	
Industry Fixed Effects	*yes*		*yes*		*yes*		*yes*		*yes*		*yes*	
Adjusted. R^2	*0.00268*		*0.00201*		*0.00329*		*0.00398*		*0.00312*		*0.00385*	

Note: This table reports the results of OLS regression over the period from 2007 to 2012. The sample consists of 7,727 observations which include 10 deals with board connections out of 62 share-financed deals and 15 deals with board connections out of 233 cash-financed deals. The regression is as follows: $Y_{i,t-1-k} = \alpha + \beta_1(SMA\_WOBC_{i,t}) + \beta_2(SMA\_WBC_{i,t}) + \beta_3(CMA\_WOBC_{i,t}) + \beta_4(CMA\_WBC_{i,t}) + \beta_5(MTB_{i,t-2-k}) + \beta_6(SIZE_{i,t-2-k}) + \beta_7(LEV_{i,t-2-k}) + \beta_8(NOA_{i,t-2-k}) + \beta_9(SEO_{i,t-1-k}) + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t}$ (Equation 4-6)

$\mathrm{Y}_{i,t-1-k}$ is replaced with $\mathrm{ATA\_JM\_PC}_{i,t-1-k}$, and $\mathrm{AWCA\_JM\_PC}_{i,t-1-k}$. *k* is replaced by 0, 1 and 2 to investigate accrual-based earnings management of share- and cash-financed acquirers with and without board connections in years *t*-1, *t*-2 and *t*-3. The independent variables are defined in the Appendix.

Table 4-22: Abnormal total and working capital accruals estimated by the modified Jones model with the intercept using the performance control approach of share-financed acquirers with and without board connections

	ATA_MJM						AWCA_MJM					
	Year *t*-3		Year *t*-2		Year *t*-1		Year *t*-3		Year *t*-2		Year *t*-1	
Intercept	0.009		0.004		0.008		0.014		0.010		0.016	
t-statistic	*0.92*		*0.44*		*0.87*		*1.3*		*0.98*		*1.6*	
$\mathrm{SMA\_WBC}_{\mathrm{i.t}}$	0.011		-0.028		0.011		0.011		-0.032		0.009	
t-statistic	*0.54*		*-1.4*		*0.58*		*0.49*		*-1.5*		*0.45*	
$\mathrm{SMA\_WOBC}_{\mathrm{i.t}}$	-0.025		0.080	*	0.099	**	-0.026		0.079	*	0.095	**
t-statistic	*-0.58*		*1.93*		*2.46*		*-0.55*		*1.76*		*2.17*	
$\mathrm{CMA\_WBC}_{\mathrm{i.t}}$	0.005		0.001		0.009		0.002		0.000		0.009	
t-statistic	*0.48*		*0.13*		*1.06*		*0.19*		*0.04*		*0.9*	
$\mathrm{CMA\_WOBC}_{\mathrm{i.t}}$	0.058		0.025		0.025		0.057		0.029		0.017	
t-statistic	*1.59*		*0.72*		*0.76*		*1.44*		*0.76*		*0.46*	
$\mathrm{MTB}_{\mathrm{i.t-2-k}}$	-0.001	*	0.000		0.000		-0.001	*	0.000		0.000	
t-statistic	*-1.76*		*0.61*		*-0.24*		*-1.8*		*0.35*		*-0.89*	
$\mathrm{SIZE}_{\mathrm{i.t-2-k}}$	0.000		0.001		0.000		0.000		0.000		0.000	
t-statistic	*-0.39*		*0.94*		*0.64*		*-0.54*		*0.41*		*0.05*	
$\mathrm{LEV}_{\mathrm{i.t-2-k}}$	0.015	*	0.005		0.004		0.008		0.001		0.000	
t-statistic	*1.82*		*0.55*		*0.5*		*0.84*		*0.15*		*0.04*	
$\mathrm{NOA}_{\mathrm{i.t-2-k}}$	-0.018	***	-0.019	***	-0.022	***	-0.019	***	-0.020	***	-0.025	***
t-statistic	*-2.7*		*-2.92*		*-3.56*		*-2.62*		*-2.89*		*-3.69*	
$\mathrm{SEO}_{\mathrm{i.t-1-k}}$	-0.013		-0.015		-0.013		-0.019		-0.020		-0.018	
t-statistic	*-3.39*		*-4.18*		*-3.6*		*-4.42*		*-4.97*		*-4.72*	
Year Fixed Effects	*yes*		*yes*		*yes*		*yes*		*yes*		*yes*	
Industry Fixed Effects	*yes*		*yes*		*yes*		*yes*		*yes*		*yes*	
Adjusted. R^2	*0.00205*		*0.00171*		*0.00282*		*0.00364*		*0.00289*		*0.00359*	

Note: This table reports the results of OLS regression over the period from 2007 to 2012. The sample consists of 7,727 observations which include 10 deals with board connections out of 62 share-financed deals and 15 deals with board connections out of 233 cash-financed deals. The regression is as follows: $Y_{i,t-1-k} = \alpha + \beta_1(SMA\_WOBC_{i,t}) + \beta_2(SMA\_WBC_{i,t}) + \beta_3(CMA\_WOBC_{i,t}) + \beta_4(CMA\_WBC_{i,t}) + \beta_5(MTB_{i,t-2-k}) + \beta_6(SIZE_{i,t-2-k}) + \beta_7(LEV_{i,t-2-k}) + \beta_8(NOA_{i,t-2-k}) + \beta_9(SEO_{i,t-1-k}) + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t}$ (Equation 4-6)
$\mathrm{Y}_{\mathrm{i,t-1-k}}$ is replaced with $\mathrm{ATA\_MJM\_PC}_{\mathrm{i,t-1-k}}$, and $\mathrm{AWCA\_MJM\_PC}_{\mathrm{i,t-1-k}}$. *k* is replaced by 0, 1 and 2 to investigate accrual-based earnings management of share- and cash-financed acquirers with and without board connections in years *t*-1, *t*-2 and *t*-3. The independent variables are defined in the Appendix.

4.6.2 Real earnings management - performance control approach

As described in section 3.4.3 in Chapter 3, ROA was also added as a regressor in the real earnings management models to control for firm performance. The four real earnings management proxies estimated using the performance control approach are $\mathrm{ACF\_PC}_{\mathrm{i,t-1-k}}$, $\mathrm{ADEXP\_PC}_{\mathrm{i,t-1-k}}$, $\mathrm{APROD\_PC}_{\mathrm{i,t-1-k}}$, and $\mathrm{ATREM\_PC}_{\mathrm{i,t-1-k}}$. Regressions are then run excluding the ROA and NOA control variables to investigate whether share-financed acquirers and cash-financed acquirers with and without board connections manipulate real earnings activities prior to a merger announcement because the ROA variable is included in the real earnings management regressions in the performance control approach, while NOA is insignificantly correlated with real earnings management. The regressions are as follows.

Equation 4-7

$$\begin{aligned} Y_{i,t-1-k} = {} & \alpha + \beta_1(XMA\_WOBC_{i,t}) + \beta_2(XMA\_WBC_{i,t}) + \beta_3(MTB_{i,t-2-k}) \\ & + \beta_4(SIZE_{i,t-2-k}) + \beta_5(LEV_{i,t-2-k}) + \beta_6(SEO_{i,t-1-k}) \\ & + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t} \end{aligned}$$

Equation 4-8

$$\begin{aligned} Y_{i,t-1-k} = {} & \alpha + \beta_1(SMA\_WOBC_{i,t}) + \beta_2(SMA\_WBC_{i,t}) + \beta_3(CMA\_WOBC_{i,t}) \\ & + \beta_4(CMA\_WBC_{i,t}) + \beta_5(MTB_{i,t-2-k}) + \beta_6(SIZE_{i,t-2-k}) \\ & + \beta_7(LEV_{i,t-2-k}) + \beta_8(NOA_{i,t-2-k}) + \beta_9(SEO_{i,t-1-k}) \\ & + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t} \end{aligned}$$

Table 4-23 presents the real earnings management behaviour under the performance control approach for share-financed acquiring firms with and without board connections prior to a merger announcement. The results derived from Equation 4-7, where $\mathrm{XMA\_WBC_{i,t}}$ and $\mathrm{XMA\_WOBC_{i,t}}$ are replaced by $\mathrm{SMA\_WBC_{i,t}}$ and $\mathrm{SMA\_WOBC_{i,t}}$, show that in year *t*-1 the coefficients of $\mathrm{SMA\_WOBC_{i,t}}$ are positive (0.086 with the dependent variable $\mathrm{ACF\_PC_{i,t-1}}$; and 0.182 with the dependent variable $\mathrm{ATREM\_PC_{i,t-1}}$; and significant at the 1% and 5% levels respectively). However, $\mathrm{ADEXP\_PC_{i,t-1}}$ and $\mathrm{APROD\_PC_{i,t-1}}$ are insignificant. The coefficients of $\mathrm{SMA\_WOBC_{i,t}}$, when the dependent variables are real earnings management proxies in year *t*-2 and year *t*-3, are insignificant. In contrast, the coefficients of $\mathrm{SMA\_WBC_{i,t}}$, when the dependent variables are real earnings management proxies in the three years prior to the merger announcement, are insignificant. These results in Table 4-23 imply that the results for abnormal real earnings management estimated under the performance control approach are consistent with the main findings. Share-financed acquirers without board connections manipulate real earnings activities in the first year prior to the merger announcement, while share-financed acquirers with board connections manipulate real earnings activities prior to the merger announcement, but not to any great extent.

Table 4-24 presents the real earnings management behaviour under the performance controlling approach of cash-financed deals with and without board connections prior to the merger announcement. The results of Table 4-24 derived from Equation 4-7, where $\mathrm{XMA\_WBC_{i,t}}$ and $\mathrm{XMA\_WOBC_{i,t}}$ are replaced by $\mathrm{CMA\_WBC_{i,t}}$ and $\mathrm{CMA\_WOBC_{i,t}}$, presents no evidence that cash-financed acquirer with and without board connections manipulate real earnings activities estimated under the performance controlling approach in three years prior to the merger announcement. The results show no significant difference from the main findings reported earlier.

Table 4-25 presents the real earnings management behaviour under the performance control approach of share- and cash-financed acquiring firms with and without board connections prior to a merger announcement. The results derived from Equation 4-8, which are included both share- and cash-financed acquirer with and without board connection indicator independent variables. Table 4-25 shows that in year *t*-1 the coefficients of $\mathrm{SMA\_WOBC_{i,t}}$ are positive (0.095 with the dependent variable $\mathrm{ACF\_PC_{i,t-1}}$; and 0.185 with the dependent variable $\mathrm{ATREM\_PC_{i,t-1}}$; and both significant at the 5% level). However, $\mathrm{ADEXP\_PC_{i,t-1}}$ and $\mathrm{APROD\_PC_{i,t-1}}$ are insignificant. The coefficients of $\mathrm{SMA\_WOBC_{i,t}}$, when the dependent variables are real earnings management proxies in years *t*-2 and *t*-3, are insignificant. Similar to the results in section 4.5.3.4, the coefficients of $\mathrm{SMA\_WBC_{i,t}}$, $\mathrm{CMA\_WOBC_{i,t}}$ and $\mathrm{CMA\_WBC_{i,t}}$ when the dependent variables are real earnings management proxies in the three years prior to the merger announcement, are insignificant. These results in Table 4-25 imply that the main finding remain qualitatively unchanged when abnormal real earnings management are estimated under the performance control approach. Share-financed acquirers without board connections manipulate real earnings activities in the first year prior to the merger announcement, while share-financed acquirers with board connections do not significantly manipulate real earnings activities prior to the merger announcement.

Table 4-23: Abnormal real earnings management under performance control approach of share-financed acquirers with and without board connections

	ACF			ADEXP			APROD			ATREM		
	Year *t*-3	Year *t*-2	Year *t*-1	Year *t*-3	Year *t*-2	Year *t*-1	Year *t*-3	Year *t*-2	Year *t*-1	Year *t*-3	Year *t*-2	Year *t*-1
Intercept	0.067 **	0.032	0.097 ***	-0.093 *	-0.146 ***	-0.166 ***	-0.058 *	-0.071 **	-0.022	-0.028	-0.114 ***	-0.051
t-statistic	*2.02*	*1.36*	*5.09*	*-1.88*	*-4.14*	*-5.65*	*-1.72*	*-2.37*	*-1.03*	*-0.56*	*-3.07*	*-1.59*
$SMA\_WOBC_{i,t}$	-0.051	-0.016	0.086 **	0.175	0.080	0.062	0.042	-0.091	0.023	0.052	0.066	0.182 ***
t-statistic	*-0.75*	*-0.34*	*2.29*	*1.77*	*1.16*	*1.1*	*0.59*	*-1.53*	*0.53*	*0.53*	*0.9*	*2.98*
$SMA\_WBC_{i,t}$	-0.035	0.119	0.039	0.106	0.029	-0.035	-0.123	-0.071	-0.028	0.053	0.168	0.019
t-statistic	*-0.26*	*1.21*	*0.48*	*0.53*	*0.2*	*-0.29*	*-0.81*	*-0.55*	*-0.29*	*0.27*	*1.11*	*0.14*
$MTB_{i,t-2-k}$	0.003 **	0.001 *	0.002 ***	-0.006 ***	-0.006 ***	-0.008 ***	-0.005 ***	-0.004 ***	-0.003 ***	-0.005 ***	-0.005 ***	-0.005 ***
t-statistic	*2.51*	*1.79*	*3.45*	*-3.86*	*-5.08*	*-7.93*	*-4.4*	*-3.85*	*-4.4*	*-3.31*	*-4.27*	*-5.13*
$SIZE_{i,t-2-k}$	-0.004 *	0.000 ***	-0.004 ***	-0.004	0.000 ***	0.004 ***	0.010 ***	0.007 ***	0.001 ***	-0.007 **	0.000 ***	-0.003 ***
t-statistic	*-1.93*	*0.13*	*-3.56*	*-1.38*	*0.1*	*2.35*	*4.72*	*3.79*	*0.92*	*-2.17*	*0*	*-1.43*
$LEV_{i,t-2-k}$	0.122 ***	0.057 ***	0.055 ***	0.055	0.056 *	0.089 ***	-0.009	0.028	0.047 **	0.115 ***	0.086 ***	0.137 ***
t-statistic	*4.53*	*2.86*	*3.34*	*1.39*	*1.91*	*3.58*	*-0.34*	*1.08*	*2.46*	*2.9*	*2.78*	*5.06*
$SEO_{i,t-1-k}$	0.071 ***	0.046 ***	0.053 ***	-0.048 **	-0.033 **	-0.024 **	0.015	0.013	0.024 ***	0.021	0.012	0.029 **
t-statistic	*5.63*	*5.18*	*7.31*	*-2.55*	*-2.51*	*-2.2*	*1.19*	*1.12*	*2.87*	*1.12*	*0.89*	*2.4*
Year Fixed Effects	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*
Industry Fixed Effects	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*
Adjusted. R^2	*0.1065*	*0.1357*	*0.1798*	*0.0543*	*0.0716*	*0.0823*	*0.0305*	*0.0412*	*0.0436*	*0.0256*	*0.0116*	*0.0201*

Note: This table reports the results of OLS regression over the period from 2007 to 2012. The sample consists of 7,727 observations which include 10 deals with board connections out of 62 share-financed deals and 15 deals with board connections out of 233 cash-financed deals. The regression is as follows: $Y_{i,t-1-k} = \alpha + \beta_1(SMA\_WOBC_{i,t}) + \beta_2(SMA\_WBC_{i,t}) + \beta_3(MTB_{i,t-2-k}) + \beta_4(SIZE_{i,t-2-k}) + \beta_5(LEV_{i,t-2-k}) + \beta_6(SEO_{i,t-1-k}) + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t}$ (Equation 4-7). $Y_{i,t-1-k}$ is replaced with $ACF\_PC_{i,t-1-k}$, $ADEXP\_PC_{i,t-1-k}$, $APROD\_PC_{i,t-1-k}$ and $ATREM\_PC_{i,t-1-k}$. *k* is replaced by 0, 1 and 2 to investigate real earnings management of share-financed acquirers with and without board connections in years *t*-1, *t*-2 and *t*-3. The independent variables are defined in the Appendix.

Table 4-24: Abnormal real earnings management under performance controlling approach of cash-financed acquirers with and without direct networks versus the rest of the sample

	ACF			ADEXP			APROD			ATREM		
	Year t-3	Year t-2	Year t-1	Year t-3	Year t-2	Year t-1	Year t-3	Year t-2	Year t-1	Year t-3	Year t-2	Year t-1
Intercept	0.268 ***	0.208 ***	0.259 ***	-0.273 ***	-0.297 ***	-0.293 ***	0.042	0.025	0.060 ***	-0.012	-0.089 **	-0.022
t-statistic	*8.17*	*8.81*	*13.31*	*-5.71*	*-8.62*	*-10.22*	*1.31*	*0.87*	*2.79*	*-0.25*	*-2.48*	*-0.72*
$\mathrm{CMA\_WOBC}_{i,t}$	-0.022	-0.052	-0.051	-0.040	0.057	0.045	-0.006	0.006	-0.012	-0.088	-0.009	-0.006
t-statistic	*-0.68*	*-2.2*	*-2.66*	*-0.81*	*1.62*	*1.58*	*-0.18*	*0.21*	*-0.6*	*-1.8*	*-0.26*	*-0.18*
$\mathrm{CMA\_WBC}_{i,t}$	0.019	0.123	0.029	0.042	-0.070	-0.131	-0.038	-0.047	0.136 *	0.061	-0.060	-0.108
t-statistic	*0.15*	*1.4*	*0.41*	*0.19*	*-0.45*	*-1.07*	*-0.33*	*-0.44*	*1.79*	*0.29*	*-0.38*	*-0.82*
$\mathrm{MTB}_{i,t-2-k}$	0.005 ***	0.003 ***	0.004 ***	-0.007 ***	-0.007 ***	-0.009 ***	-0.004 ***	-0.003 ***	-0.002 ***	-0.005 ***	-0.005 ***	-0.005 ***
t-statistic	*4.38*	*3.95*	*6.16*	*-4.72*	*-6.09*	*-9.33*	*-3.51*	*-2.89*	*-3.08*	*-3.25*	*-4.13*	*-4.83*
$\mathrm{SIZE}_{i,t-2-k}$	-0.017 ***	-0.012 ***	-0.015 ***	0.007 **	0.010 ***	0.012 ***	0.004 *	0.000 ***	-0.004 ***	-0.008 **	-0.002 ***	-0.005 ***
t-statistic	*-8.33*	*-8.08*	*-12.51*	*2.39*	*4.78*	*7.16*	*1.74*	*0.28*	*-3.27*	*-2.57*	*-0.75*	*-2.49*
$\mathrm{LEV}_{i,t-2-k}$	0.157 ***	0.075 ***	0.074 ***	0.025	0.042	0.074 ***	0.007	0.039	0.058 ***	0.116 ***	0.087 ***	0.140 ***
t-statistic	*5.69*	*3.59*	*4.25*	*0.62*	*1.4*	*2.94*	*0.26*	*1.49*	*3*	*2.94*	*2.83*	*5.16*
$\mathrm{SEO}_{i,t-1-k}$	0.100 ***	0.073 ***	0.080 ***	-0.074 ***	-0.054 ***	-0.043 ***	0.032 **	0.029 ***	0.040 ***	0.022	0.016	0.035 ***
t-statistic	*7.73*	*7.95*	*10.45*	*-3.93*	*-4.11*	*-3.92*	*2.46*	*2.58*	*4.69*	*1.17*	*1.16*	*2.91*
$Year\ Fixed\ Effects$	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*
$Industry\ Fixed\ Effects$	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*
Adjusted. R^2	*0.049*	*0.0443*	*0.0736*	*0.029*	*0.0367*	*0.0474*	*0.0149*	*0.0207*	*0.0183*	*0.0262*	*0.0106*	*0.0176*

Note: This table reports the results of OLS regression over the period from 2007 to 2012. The sample consists of 7,727 observations which include 10 deals with board connections out of 62 share-financed deals and 15 deals with board connections out of 233 cash-financed deals. The regression is as follows: $Y_{i,t-1-k} = \alpha + \beta_1(CMA\_WOBC_{i,t}) + \beta_2(CMA\_WBC_{i,t}) + \beta_3(MTB_{i,t-2-k}) + \beta_4(SIZE_{i,t-2-k}) + \beta_5(LEV_{i,t-2-k}) + \beta_6(SEO_{i,t-1-k}) + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t}$ (Equation 4-7). $\mathrm{Y}_{i,t-1-k}$ is replaced with $\mathrm{ACF\_PC}_{i,t-1-k}$, $\mathrm{ADEXP\_PC}_{i,t-1-k}$, $\mathrm{APROD\_PC}_{i,t-1-k}$ and $\mathrm{ATREM\_PC}_{i,t-1-k}$. *k* is replaced by 0, 1 and 2 to investigate real earnings management of cash-financed acquirers with and without board connections in years *t*-1, *t*-2 and *t*-3. The independent variables are defined in the Appendix.

Table 4-25: Abnormal real earnings management under performance control approach of share- and cash-financed acquirers with and without board connections

	ACF			ADEXP			APROD			ATREM		
	Year *t*-3	Year *t*-2	Year *t*-1	Year *t*-3	Year *t*-2	Year *t*-1	Year *t*-3	Year *t*-2	Year *t*-1	Year *t*-3	Year *t*-2	Year *t*-1
Intercept	0.268 ***	0.207 ***	0.258 ***	-0.276 ***	-0.298 ***	-0.294 ***	0.041	0.027	0.059 ***	-0.013	-0.091 **	-0.025
t-statistic	*8.17*	*8.76*	*13.25*	*-5.77*	*-8.64*	*-10.24*	*1.28*	*0.91*	*2.78*	*-0.28*	*-2.53*	*-0.81*
$\mathrm{SMA\_WOBC}_{\mathrm{i,t}}$	-0.012	0.033	0.095 **	0.134	0.034	0.049	0.061	-0.061	0.031	0.052	0.073	0.185 ***
t-statistic	*-0.18*	*0.66*	*2.39*	*1.35*	*0.48*	*0.86*	*0.85*	*-1.01*	*0.71*	*0.53*	*1*	*3.02*
$\mathrm{SMA\_WBC}_{\mathrm{i,t}}$	-0.011	0.097	0.000	0.085	0.055	-0.008	-0.118	-0.081	-0.047	0.053	0.164	0.013
t-statistic	*-0.08*	*0.93*	*0*	*0.42*	*0.38*	*-0.07*	*-0.78*	*-0.61*	*-0.48*	*0.27*	*1.08*	*0.1*
$\mathrm{CMA\_WOBC}_{\mathrm{i,t}}$	-0.023	-0.051	-0.050	-0.039	0.057	0.045	-0.005	0.006	-0.012	-0.088	-0.009	-0.004
t-statistic	*-0.68*	*-2.19*	*-2.63*	*-0.78*	*1.63*	*1.59*	*-0.17*	*0.19*	*-0.59*	*-1.79*	*-0.24*	*-0.14*
$\mathrm{CMA\_WBC}_{\mathrm{i,t}}$	0.018	0.124	0.030	0.042	-0.069	-0.131	-0.037	-0.047	0.136	0.061	-0.060	-0.107
t-statistic	*0.15*	*1.41*	*0.42*	*0.2*	*-0.45*	*-1.07*	*-0.32*	*-0.44*	*1.79*	*0.29*	*-0.37*	*-0.81*
$\mathrm{MTB}_{\mathrm{i,t-2-k}}$	0.005 ***	0.003 ***	0.004 ***	-0.008 ***	-0.007 ***	-0.009 ***	-0.004 ***	-0.003 ***	-0.002 ***	-0.005 ***	-0.005 ***	-0.005 ***
t-statistic	*4.39*	*3.96*	*6.15*	*-4.75*	*-6.09*	*-9.34*	*-3.53*	*-2.89*	*-3.09*	*-3.26*	*-4.12*	*-4.86*
$\mathrm{SIZE}_{\mathrm{i,t-2-k}}$	-0.017 ***	-0.012 ***	-0.015 ***	0.007 **	0.010 ***	0.012 ***	0.004 *	0.000	-0.004 ***	-0.007 **	-0.002	-0.004 **
t-statistic	*-8.33*	*-8.05*	*-12.44*	*2.45*	*4.8*	*7.18*	*1.77*	*0.23*	*-3.26*	*-2.54*	*-0.7*	*-2.38*
$\mathrm{LEV}_{\mathrm{i,t-2-k}}$	0.157 ***	0.075 ***	0.075 ***	0.025	0.042	0.074 ***	0.007	0.038	0.058 ***	0.116 ***	0.088 ***	0.140 ***
t-statistic	*5.68*	*3.61*	*4.27*	*0.62*	*1.4*	*2.94*	*0.25*	*1.47*	*3*	*2.95*	*2.84*	*5.17*
$\mathrm{SEO}_{\mathrm{i,t-1-k}}$	0.100 ***	0.073 ***	0.079 ***	-0.074 ***	-0.055 ***	-0.044 ***	0.031 **	0.030 ***	0.039 ***	0.022	0.016	0.033 ***
t-statistic	*7.73*	*7.93*	*10.28*	*-3.93*	*-4.12*	*-3.96*	*2.44*	*2.62*	*4.64*	*1.17*	*1.14*	*2.75*
$Year\ Fixed\ Effects$	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*
$Industry\ Fixed\ Effects$	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*
Adjusted. R^2	*0.0487*	*0.0442*	*0.0741*	*0.029*	*0.0365*	*0.0472*	*0.0148*	*0.0206*	*0.0181*	*0.0259*	*0.0107*	*0.0187*

Note: This table reports the results of OLS regression over the period from 2007 to 2012. The sample consists of 7,727 observations which include 10 deals with board connections out of 62 share-financed deals and 15 deals with board connections out of 233 cash-financed deals. The regression is as follows: $Y_{i,t-1-k} = \alpha + \beta_1(SMA\_WOBC_{i,t}) + \beta_2(SMA\_WBC_{i,t}) + \beta_3(CMA\_WOBC_{i,t}) + \beta_4(CMA\_WBC_{i,t}) + \beta_5(MTB_{i,t-2-k}) + \beta_6(SIZE_{i,t-2-k}) + \beta_7(LEV_{i,t-2-k}) + \beta_8(NOA_{i,t-2-k}) + \beta_9(SEO_{i,t-1-k}) + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t}$ (Equation 4-8). $\mathrm{Y}_{\mathrm{i,t-1-k}}$ is replaced with $\mathrm{ACF\_PC}_{\mathrm{i,t-1-k}}$, $\mathrm{ADEXP\_PC}_{\mathrm{i,t-1-k}}$, $\mathrm{APROD\_PC}_{\mathrm{i,t-1-k}}$ and $\mathrm{ATREM\_PC}_{\mathrm{i,t-1-k}}$. *k* is replaced by 0, 1 and 2 to investigate real earnings management of share- and cash-financed acquirers with and without board connections in years *t*-1, *t*-2 and *t*-3. The independent variables are defined in the Appendix.

4.7 SUMMARY

This chapter has investigated whether and how board connections between acquiring and target firms affect earnings management behaviour. The analyses are based on the sample of 295 M&A deals in the UK in the 2007 – 2012 period, including 62 share-financed deals and 233 cash-financed deals. There are 10 deals with board connections out of the 62 share-financed deals and 15 deals with board connections out of the 233 cash-financed deals. To measure accrual-based earnings management and real earnings management, the study has estimated abnormal total and working capital accruals using the Jones model and the modified Jones model under the cash flow approach with the intercept and estimated abnormal cash flow, abnormal discretionary expenses, abnormal production costs and abnormal total real earnings management using expectations models developed by Roychowdhury (2006). For cash-financed M&A deals, there is no evidence that acquirers with and without board connections manipulate their earnings prior to the merger announcement. However, for share-financed M&A deals, the results show that acquirers with board connections significantly increase accrual-based earnings management early on, i.e. in the first and second years prior to the merger announcement, while those without board connections manipulate real earnings activities such as cash flow in the first year prior to the merger announcement. The findings suggest that less uncertainty about the M&A deal and a stronger bargaining position in the negotiations for acquirers with board connections allow these firms to strategically time and confidently inflate their accruals earnings management, while share-financed acquirers without board connections strategically manipulate real earnings management to avoid potential litigation and regulatory risk.

Overall, this research enhances understanding of earnings management behaviours prior to the merger announcement in UK. The evidence provided from this research makes significant contribution to our understanding of how the director connections affect corporate decisions.

CHAPTER 5: EARNINGS MANAGEMENT BY SHARE-FINANCED ACQUIRERS PRIOR TO DEAL ANNOUNCEMENTS: THE ROLES OF FINANCIAL EXPERTISE, TENURE AND REPUTATION[9]

Abstract

Previous research has suggested that share-financed acquirers inflate their earnings before merger announcements. The existing literature also indicates that the characteristics of CEOs could affect earnings management. This chapter extends prior studies by examining the relationships between CEO characteristics and accrual-based and real earnings management in share-financed acquirers before a merger announcement. It finds that CEOs with financial expertise, long tenure and high reputation are associated with lower abnormal accruals in share-financed M&A deals. However, under real earnings management, only CEOs with financial expertise are associated with lower real earnings management in share-financed M&A deals. The correlations are statistically significant and consistently exist in the first year before the deal announcement. These findings are robust to different measures of abnormal accruals and real earnings activities and estimations employing different models. The evidence suggests that CEO characteristics have an impact on earnings management in the context of share-financed M&A and have some implications for practitioners.

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[9] This chapter has been presented at British Accounting and Finance Association (BAFA) annual conference 2018. This chapter has also been accepted to present at 2018 American Accounting Association (AAA) Forensic Accounting Research Conference, 2018 American Accounting Association (AAA) Southeast Region Conference, 2018 American Accounting Association (AAA) Ohio Region Meeting, CAAA Canadian Academic Accounting Association 2018, 35th Annual Conference of the French Finance Association (AFFI) and The World Finance Conference 2018.

5.1 INTRODUCTION

As reviewed in section 3.2.1 in Chapter 3, many published studies show that share-financed acquirers significantly inflate accruals and real earnings activities before a merger announcement to reduce acquisition costs (Louis 2004; Botsari and Meeks 2008; Pungaliya and Vijh 2009; Zhu and Lu 2013; Farooqi et al. 2017). Prior studies also provide evidence that the characteristics of CEOs matter in the context of M&A deals (Grinstein and Hribar 2004; Walters et al. 2007; Malmendier and Tate 2008; Custódio and Metzger 2013). In this chapter, it is hypothesized that CEO characteristics could impact earnings management before the merger announcement. The characteristics investigated are financial expertise, tenure and reputation of CEOs.

First, there is evidence that managers with financial expertise are more likely to produce higher organizational outcomes. For example, Custódio and Metzger (2013) find that CEOs who are financial experts are often in a better position to negotiate in M&A transactions so that the acquirers might pay less, resulting in higher post-M&A returns. CEOs with financial expertise are also associated with better organizational outcomes, such as more flexible financial policies and ability to access external funds in difficult credit situations (Custódio and Metzger 2014). Also, Aier et al. (2005) find that CFOs' financial expertise is negatively correlated with the use of accounting restatements, which is a proxy for earnings management.

Second, previous research shows that earnings management is lower in later than early years of a CEOs' service (Ali and Zhang 2015). The reason is thought to be that CEOs with long tenure are perceived to be more talented than CEOs with short tenure. CEOs with long tenure establish a reputation for managerial ability. Therefore, CEOs with long tenure will be less likely to engage in earnings management to protect their reputation (Ali and Zhang 2015). In the case of CEOs with short tenure, earnings management tends to be high in the early years of service because they have incentives to avoid being judged as having low ability, which would lead to their dismissal or negatively affect their autonomy and future compensation (Ali and Zhang 2015).

Finally, the existing literature suggests that the reputation of managers affects corporate practices, but the evidence is mixed. On the one hand, Jian and Lee (2011) find that CEOs with a high reputation receive favourable responses from the market to announcements of capital investment. Moreover, CEOs with a high reputation can generate higher post-investment returns. Also, Francis et al. (2008) find that firms which use earnings management to a significant degree are more likely to hire CEOs with a high reputation so that these CEOs can help to reduce earnings management in subsequent periods. The evidence suggests that there is a negative relationship between the reputation of CEOs and earnings management. On the other hand, CEOs with a high reputation are found to prioritize enhancing their reputation instead of improving the wealth of shareholders (Hirshleifer 1993; Malmendier and Tate 2009).

This chapter specifically examines the influence of CEOs' traits on earnings management before a merger announcement, a setting in which existing evidence has suggested that the incentives for earnings management will be high for the CEOs of acquirers without financial expertise, short tenure and low reputation. To measure financial expertise, the study looks at whether the CEOs have had work experience as CFOs in the past and other finance-related qualifications of CEOs (Aier et al. 2005; Nguyen et al. 2016). Tenure is measured using the number of years in the role of CEO (Ali and Zhang 2015). In terms of reputation, the CEO’s media coverage is measured (Milbourn 2003; Francis et al. 2008; Jian and Lee 2011).

Regarding proxies for earnings management, abnormal accruals are estimated using the models of Jones (1991) and Dechow et al. (1995) and abnormal real earnings management using real earnings management models developed by Roychowdhury (2006). The sample comprises 7,727 firm-year observations of UK companies from 2007 to 2012, which includes 62 observations with share-financed M&A deals. In the first year before a deal announcement, CEOs with financial expertise, long tenure and high reputation are found to be associated with lower accrual-based earnings management in share-financed acquirers. For real earnings management, CEOs with long tenure and high reputation are insignificantly correlated with lower real earnings management, except for CEOs with financial expertise. The results are statistically significant and robust as abnormal accruals and real earnings activities are measured in different ways and employing different models.

The evidence is new and adds significantly to the growing literature investigating how CEOs’ traits influence corporate practices. The research is the first to examine the relationships between CEO characteristics and earnings management in the context of M&A deals. While previous research has only focused on earnings management of acquirers and targets before the merger announcement (Botsari and Meeks 2008), this study provides evidence that CEO characteristics affect earnings management in the first year before the merger announcement. Also, it provides further evidence to support the notion that CEO characteristics are important determinants of financial policies around M&A deals (Grinstein and Hribar 2004; Walters et al. 2007; Malmendier and Tate 2008; Custódio and Metzger 2013).

The findings of this chapter could be useful for practitioners, such as investors and auditors. Investors should be cautious when using information related to M&A deal announcements from acquirers with CEOs of low reputation, short tenure and without financial expertise because earnings are more likely to be manipulated in the first year before the merger announcement. The reason is that inflated earnings can be reversed in subsequent periods, which in turn reduces abnormal returns from investments in stocks of acquirers. Similarly, when auditing financial statements, auditors could particularly pay attention to firms with CEOs of low reputation, short tenure and without financial expertise because the risks of earnings management are high in the first year before the merger announcement.

The rest of the chapter proceeds as follows. Section 5.2 presents a literature review and develops hypotheses. Section 5.3 presents the sample selection. Section 5.4 describes the methodology. Section 5.5 discusses the findings. Finally, section 5.6 and **Error! Reference source not found.** provide robustness tests and conclusions.

5.2 LITERATURE REVIEW AND HYPOTHESES

5.2.1 Earnings management in share-financed acquirers

As reviewed in section 3.2.1 in Chapter 3, M&A is a key part of financial activities and corporate growth strategy. Acquirers' earnings management or the effect of acquirers' earnings management on shareholder wealth has thus attracted attention from researchers. Some research has shown that share-financed acquirers manage earnings before M&A (Erickson and Wang 1999; Louis 2004; Botsari and Meeks 2008).

Share-financed acquirers are motivated to manage earnings to increase their stock price. If the acquirers' stock price is high, the amount of stock used for exchange in M&A deals will be low because the exchange ratio is inverse to the acquirers' stock price. This motivation is explained well by agency theory (Jensen and Meckling 1976; Watts and Zimmerman 1990), which suggests that acquirers manage earnings when the costs of undoing earnings management are lower than the costs of detecting earnings management (Watts and Zimmerman 1990; Erickson and Wang 1999). However, the risk of detection may not deter acquirers from becoming involved in earnings management activities if earnings are managed within GAAP[10]. Thus, earnings management in acquirers is neither easily detected nor prevented.

5.2.2 CEO characteristics and earnings management

Although previous research shows that share-financed acquirers inflate their earnings management before a merger announcement, acquirers with different CEO characteristics could manipulate earnings differently. This section briefly discusses the relationship between CEO characteristics and earnings management.

Previous research provides evidence that the working experience and personalities of CEOs can affect corporate practices. Hambrick and Finkelstein (1987) argue that managers' traits matter because managers rely on their own experience, values and personalities to interpret strategic circumstances. Miller et al. (1986) also provide a psychological explanation for the relationship between top executives' characteristics and organizational outcomes.

[10] General Accepted Accounting Principles (GAAP)

There is also empirical evidence in line with the argument that CEO characteristics are determinants of organizational outcomes. Bertrand and Schoar (2003) find that management style affects various corporate practices. Ge et al. (2011) also provide evidence that the style of CFOs affects corporate investment and financial policies. On the direct evidence on concerning CEO characteristics, Custódio and Metzger (2014) find that CEOs who are financial experts are more likely to generate better organizational outcomes, such as more flexible financial policies and the ability to access external funds in difficult credit situations.

In addition to the above evidence, the existing literature also suggests that executives' characteristics influence accounting practices such as earnings management. Specifically, financial expertise is an important determinant of earnings management. Aier et al. (2005) examine whether CFO characteristics are related to accounting restatement, a measure of earnings management. They argue that CFOs who are financial experts can contribute considerably to the accounting system. Thus, they are more likely to result in good accounting outcomes. Consistent with their prediction, they find that firms with CFOs who are financial experts are less likely to be involved in accounting restatement.

In terms of CEO tenure, Ali and Zhang (2015) investigated the correlation between CEO tenure and earnings management. They find that earnings management is greater in firms with long-tenured CEOs than in firms with short-tenured CEOs. They argue that CEOs with long tenure are more talented than those with short tenure. They have built up their reputations in managerial ability over a long-time in the role. Therefore, they will have an incentive not to prioritize earnings management if there is a risk of it damaging their reputation. In contrast, the market is usually uncertain about the management ability of newly appointed CEOs (Gibbons and Murphy 1992; Ali and Zhang 2015). Therefore, CEOs with short tenure are more likely to be keen to engage in earnings management to prove their managerial ability, while protecting their compensation and remaining in their position (Kuang et al. 2014; Ali and Zhang 2015).

Reputation is also a characteristic that influences earnings management, but the evidence on this influence is mixed. On the one hand, Hirshleifer (1993) suggests that managers are motivated to affect corporate investment in a way that builds up their reputation rather than the wealth of shareholders. Also, Malmendier and Tate (2009) evaluate the effect of CEOs achieving “superstar” status on firm performance. The researchers find that the statistical distribution of compensation, status and reputation of executives in the US is highly skewed: a few “superstars” enjoy significant benefits in terms of rewards. They find that, after winning an award conferred by national media organizations such as Forbes, Time and Fortune, CEOs underperform compared with their prior performance and compared with CEOs who have not won an award. The evidence also indicates that superstar CEOs extract higher compensation and firms’ earnings are managed upward after CEOs win awards. The results suggest that CEOs opportunistically inflate their firms’ earnings. However, Francis et al. (2008) also find that firms engaging in significant earnings management are more likely to hire CEOs with high reputations so that these CEOs can help to reduce earnings management in subsequent periods. The evidence suggests that there is a negative relationship between the reputation of CEOs and earnings management.

5.2.3 Do CEO characteristics matter for mergers and acquisitions?

As discussed above, previous research shows that share-financed acquirers inflate their earnings before a merger announcement (Botsari and Meeks 2008). Prior evidence also suggests that CEO characteristics are important determinants of earnings management (Francis et al. 2008; Malmendier and Tate 2009; Feng et al. 2011). Thus, it is possible that CEO characteristics may affect earnings management around M&A deals.

There are reasons to believe that CEO traits are relevant in the context of M&A. Grinstein and Hribar (2004) explain why CEO characteristics are important for M&A deals. They find that powerful CEOs are more likely to influence the decisions of boards of directors to extract higher compensation and bonuses related to the completion of M&A deals. Walters et al. (2007) also explain that CEOs affect M&A deals by extending their tenure in acquirers. Custódio and Metzger (2013) show that CEOs who are financial experts are often in a better position to negotiate in M&A transactions in which acquirers pay less, resulting in higher post-M&A returns. In contrast to Custódio and Metzger (2013), Malmendier and Tate (2008) find that firms which have overconfident CEOs are more likely to make value-destroying M&A deals because they overestimate the subsequent returns.

5.2.4 Hypotheses

Although CEO characteristics are important for M&A deals, the existing literature does not provide any evidence on the relationship between CEO characteristics and earnings management around M&A deals. As a response to the gap in the literature, this study examined how characteristics of CEOs affect earnings management before the merger announcement.

The existing literature has shown that CEOs of share-financed acquiring firms try to inflate earnings in the year preceding the deals to minimize the number of shares exchanged for the target, an expected result assuming CEOs are working to maximize shareholders' wealth (Erickson and Wang 1999; Louis 2004; Botsari and Meeks 2008). It has also been established that financial expertise generally helps managers to be able to deliver better organizational outcomes (Aier et al. 2005; Burak Güner et al. 2008; Albring et al. 2014; Badolato et al. 2014). In the context of M&A deals, CEOs with financial expertise are typically better able to estimate the financial costs and benefits of these deals (Ge et al. 2011). Therefore, it is expected that CEOs with financial expertise could be able to deliver good M&A outcomes without having to resort to costly earning management options. Following this line of reasoning, the first hypothesis is as follows:

H5.1: *CEOs with financial expertise are associated with lower earnings management in the year preceding share-financed M&A a deal announcement.*

With regard to CEO tenure, previous research shows that CEOs with long tenure engage in less earnings management than those with short tenure (Ali and Zhang 2015). CEOs with long tenure are perceived as more experienced and talented than CEOs with short tenure. They have established a reputation for high ability. Therefore, long-tenured CEOs will not be keen to engage in earnings management to protect their reputation (Ali and Zhang 2015). However, CEOs with short tenure have an incentive to engage in earnings management because they are more likely to wish to avoid being judged as having low ability, which would lead to their dismissal or negatively affect their autonomy and future compensation (Kuang et al. 2014; Ali and Zhang 2015). Thus, the second hypothesis is as follows:

H5.2: CEOs with long tenure are associated with lower earnings management in the year preceding share-financed M&A a deal announcement.

In a similar vein, the extant literature has shown that CEOs with a better reputation are more likely to produce better organizational outcomes (Francis et al. 2008; Jian and Lee 2011). Taking this evidence in the context of share-financed M&A deals, it is posited that highly reputable CEOs will be less likely to resort to costly earnings management, not only because their reputation implies a good deal is more likely to be reached, but also because engaging in earnings management will risk their reputation being damaged. Thus, the third hypothesis is as follows:

H5.3: High reputable CEOs are associated with lower earnings management in the year preceding share-financed M&A deal announcement.

5.3 SAMPLE SELECTION

5.3.1 Sample selection

The sample used in this chapter is similar that in Chapter 3. The sample has 7,727 observations covering all UK firms during the period 2007 to 2012 which have sufficient data to estimate accruals and real earnings management. For the M&A sample, as explained in section 3.3, the final M&A sample consists of 62 share-financed deals.

For CEO characteristics, the CEO is identified as the individual listed in Bloomberg as the CEO or equivalent. If a firm has had two CEOs in a firm-year, the CEO with than 6 months in the role is excluded. If a firm has had co-CEOs in a firm-year, the one with less time in the role is excluded. Next, data were hand-collected on the characteristics of each CEO in the sample from Bloomberg, including the CEO's financial certificates and/or qualification[11] and years in the role, if any. If data for a CEO were missing from Bloomberg, the data were obtained directly from the annual reports downloaded from Key Note. If it was not possible to obtain the CEO's financial certificates and qualification and years in the role using the above procedures, the observation was dropped from the sample.

For media coverage of a CEO in a year, a search was conducted for business news related to the CEO in LexisNexis database using the CEO's name and the company name. Following Francis et al. (2008), the search was restricted to nationally circulated UK newspapers within the three-year period prior to and including the fiscal year considered. Only observations with all the data needed for the main analyses were retained. The process yielded a sample of 7,727 firm-year observations (including 1,855 separate companies across 70 industries). The sample consisted of 62 share-financed deals. All continuous variables were winsorized at the 1st and 99th percentiles to mitigate the influence of outliers.

[11] Qualification is a professional accounting certification issued by one of five current qualifying bodies: the Association of Chartered Certified Accountants (ACCA), Association of International Accountants (AIA), Institute of Chartered Accountants in England and Wales (ICAEW), Chartered Accountants Ireland (CAI) and Institute of Chartered Accountants of Scotland (ICAS).

5.3.2 CEO characteristics sample

The CEO characteristics investigated in this study include financial expertise, tenure and reputation. Following previous studies (Aier et al. 2005; Nguyen et al. 2016), finance and accounting certification or experience as a CFO help CEOs gain financial expertise, which is relevant in the context of earnings management. The CEO's financial expertise proxy is EXP, which is a dummy variable taking the value of 1 if a CEO has a Master of Business Administration degree or a Chartered Accountant certification accredited by the Financial Reporting Council (FRC, 2016) or equivalent, or if the CEO has worked as a CFO in the past, zero otherwise. Following Ali and Zhang (2015), CEO tenure is TENURE, which is a dummy variable taking the value of 1 if the CEO has a higher than average number of years in the role compared to other CEOs in the same industry, zero otherwise. Thus, CEOs have financial expertise and long tenure when EXP and TENURE are equal to 1.

Media coverage (PRESS) is the first proxy for CEO reputation (Milbourn 2003; Francis et al. 2008; Jian and Lee 2011; Nguyen et al. 2016). There are two PRESS proxies, $\mathrm{PRESS2}$ and $\mathrm{PRESS3}$, for robustness testing, which are dummy variables taking the value of 1 if the number of news stories covering the CEO's name and company in year *t*-1 and year *t* for $\mathrm{PRESS2}$, or year *t*-2, year *t*-1 and year *t* for $\mathrm{PRESS3}$ are higher than the average of those in the same industry, zero otherwise. Thus, CEOs have a high reputation when $\mathrm{PRESS2}$ or $\mathrm{PRESS3}$ are equal 1. The share-financed acquirer's characteristics sample and CEO characteristics of the rest of the sample are presented in Table 5-1.

Table 5-1: Year distributions of CEOs' characteristics of UK firms in the period from 2007 to 2012

Panel A: Year distribution of CEOs' characteristics for share-financed deals

Year	Full sample	Long tenure	Short Tenure	With financial expertise	Without financial expertise	High press2 coverage	Low press2 coverage	High press3 coverage	Low press3 coverage
2007	13	1	12	2	11	4	9	4	9
2008	12	3	9	3	9	1	11	1	11
2009	11	0	11	2	9	1	10	2	9
2010	15	3	12	7	8	6	9	6	9
2011	7	3	4	3	4	2	5	2	5
2012	4	3	1	2	2	2	2	2	2
Total	62	13	49	19	43	16	46	17	45

Panel B: Year distribution of CEOs' characteristics for the rest of the sample

Year	Full sample	Long tenure	Short Tenure	With financial expertise	Without financial expertise	High press2 coverage	Low press2 coverage	High press3 coverage	Low press3 coverage
2007	1,338	220	1,118	248	1,090	191	1,147	198	1,140
2008	1,351	267	1,084	292	1,059	216	1,135	234	1,117
2009	1,311	279	1,032	327	984	219	1,092	236	1,075
2010	1,279	277	1,002	355	924	223	1,056	248	1,031
2011	1,226	284	942	371	855	254	972	269	957
2012	1,160	291	869	366	794	271	889	289	871
Total	7,665	1,618	6,047	1,959	5,706	1,374	6,291	1,474	6,191

5.4 METHODOLOGY

5.4.1 Accrual-based earnings management and real earnings management

The chapter estimates abnormal total accruals and abnormal working capital accruals from cash flows using the Jones and modified Jones models with the intercept and abnormal real earnings management as described in section 3.4.2 in Chapter 3. Therefore, the proxies for estimating abnormal accruals include $\mathrm{ATA\_JM_{i,t}}$ and $\mathrm{ATA\_MJM_{i,t}}$ (abnormal total accruals from cash flows estimated using the Jones and modified Jones models with the intercept) and $\mathrm{AWCA\_JM_{i,t}}$ and $\mathrm{AWCA\_MJM_{i,t}}$ (abnormal working capital accruals from cash flows estimated using the Jones and modified Jones models with the intercept). The proxies for estimating abnormal real earnings management include $\mathrm{ACF_{i,t}}$ (abnormal cash flow), $\mathrm{ADEXP_{i,t}}$ (abnormal discretionary expenses), $\mathrm{APROD_{i,t}}$ (abnormal production costs) and $\mathrm{ATREM_{i,t}}$ (abnormal total real earnings management).

5.4.2 Control variables

As reviewed in section 3.4.5 in Chapter 3, similar to Chapter 4, this chapter controlled for the firms' characteristics which could drive aggressive earnings management by adding to the regressions firm size (SIZE), firms' leverage (LEV), net operating assets (NOA) and return on assets (ROA). To control for the effect of firms' incentives to engage in earnings management, the chapter adds seasoned equity offering (SEO) and the firms' stock overvaluation, i.e. the market-to-book ratio (MTB), to the regressions.

5.4.3 Empirical models

To test H5.1, H5.2 and H5.3, which investigate the correlation of CEO characteristics and accrual-based earnings management by share-financed acquirers prior to a merger announcement, the following regressions is as follows:

Equation 5-1

$$Y_{i,t-1} = \alpha + \beta_1(X_{i,t-1}) + \beta_2(X_{i,t-1\_}SMA_{i,t}) + \beta_3(SMA_{i,t}) + \beta_4(MTB_{i,t-2}) + \beta_5(SIZE_{i,t-2}) + \beta_6(ROA_{i,t-1}) + \beta_7(LEV_{i,t-2}) + \beta_8(SEO_{i,t-1}) + \beta_9(NOA_{i,t-2}) + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t-1}$$

$\mathrm{Y}_{\mathrm{i,t-1}}$ is replaced by abnormal total accruals estimated by the Jones and modified Jones models under the cash flow approach ($\mathrm{ATA\_JM}_{\mathrm{i,t-1}}$ and $\mathrm{ATA\_MJM}_{\mathrm{i,t-1}}$) and abnormal working capital estimated by the Jones and modified Jones models under the cash flow approach ($\mathrm{AWCA\_JM}_{\mathrm{i,t-1}}$ and $\mathrm{AWCA\_MJM}_{\mathrm{i,t-1}}$). $\mathrm{X}_{\mathrm{i,t-1}}$ denotes the CEO characteristics, namely $\mathrm{EXP}_{\mathrm{i,t-1}}$, $\mathrm{TENURE}_{\mathrm{i,t-1}}$, $\mathrm{PRESS2}_{\mathrm{i,t-1}}$ and $\mathrm{PRESS3}_{\mathrm{i,t-1}}$ in year *t*-1, the first year prior to a merger announcement. $\mathrm{SMA}_{\mathrm{i,t}}$ is an indicator variable which is set to 1 for share-financed acquiring firms *i* in year *t*, zero otherwise. Other variables are as explained in section 3.4.5.

In terms of real earnings management, to test H5.1, H5.2 and H5.3, linear regressions are run investigating the correlation of CEO characteristics and real earnings management by share-financed acquirers prior to deal announcements. Specifically, the following regression is estimated:

Equation 5-2

$$Y_{i,t-1} = \alpha + \beta_1(X_{i,t-1}) + \beta_2(X_{i,t-1} * SMA_{i,t}) + \beta_3(SMA_{i,t}) + \beta_4(MTB_{i,t-2}) + \beta_5(SIZE_{i,t-2}) + \beta_6(ROA_{i,t-1}) + \beta_7(LEV_{i,t-2}) + \beta_8(SEO_{i,t-1}) + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t-1}$$

$\mathrm{Y}_{\mathrm{i,t-1}}$ is replaced by $\mathrm{ACF}_{\mathrm{i,t-1}}$, $\mathrm{ADEXP}_{\mathrm{i,t-1}}$, $\mathrm{APROD}_{\mathrm{i,t-1}}$ and $\mathrm{ATREM}_{\mathrm{i,t-1}}$. $\mathrm{X}_{\mathrm{i,t-1}}$ denotes the CEO characteristics, namely $\mathrm{EXP}_{\mathrm{i,t-1}}$, $\mathrm{TENURE}_{\mathrm{i,t-1}}$, $\mathrm{PRESS2}_{\mathrm{i,t-1}}$ and $\mathrm{PRESS3}_{\mathrm{i,t-1}}$ in year *t*-1. This regression excludes $\mathrm{NOA}_{\mathrm{i,t-1}}$ because previous research has not shown significant correlations between real earnings management and NOA.

5.5 RESULT

5.5.1 Descriptive statistics

Table 5-2 provides an overview of CEO characteristics (Panel A), proxies of earnings management (Panel B), firm characteristics (Panel C) and control variables (Panel D). In Panel A, the descriptive statistics show that the sample has fewer CEOs with financial expertise and long tenure than CEOs without financial expertise and short tenure (the medians of EXP and TENURE are 0). The statistics also indicate that there are fewer highly reputable CEOs than CEOs with low reputation (the medians of $\mathrm{PRESS2}$ and $\mathrm{PRESS3}$ are 0). The descriptive statistics of proxies for earnings management, firm statistics and control variables are presented in Panels B, C and D, as discussed in section 3.5.1.

Table 5-2: Summary descriptive statistics

Statistics	N	MEAN	STD	MIN	P25	MEDIAN	P75	MAX
Panel A: Summary statistics for CEO's characteristics								
$EXP_{i,t-1}$	7,727	0.256	0.436	0.000	0.000	0.000	1.000	1.000
$TENURE_{i,t-1}$	7,727	0.211	0.408	0.000	0.000	0.000	0.000	1.000
$PRESS2_{i,t-1}$	7,727	0.180	0.384	0.000	0.000	0.000	0.000	1.000
$PRESS3_{i,t-1}$	7,727	0.193	0.395	0.000	0.000	0.000	0.000	1.000
Panel B: Earnings management proxies								
$ATA\_JM_{i,t-1}$	7,727	-0.010	0.135	-0.553	-0.059	-0.004	0.049	0.428
$AWCA\_JM_{i,t-1}$	7,727	-0.010	0.134	-0.529	-0.058	-0.005	0.050	0.430
$ATA\_MJM_{i,t-1}$	7,727	-0.017	0.149	-0.595	-0.074	-0.010	0.051	0.441
$AWCA\_MJM_{i,t-1}$	7,727	-0.017	0.147	-0.589	-0.074	-0.010	0.051	0.425
$ACF_{i,t-1}$	7,727	-0.008	0.282	-1.115	-0.1	-0.014	0.057	1.292
$APROD_{i,t-1}$	7,727	-0.020	0.434	-2.349	-0.112	0.018	0.145	1.470
$ADEXP_{i,t-1}$	7,727	-0.010	0.255	-1.091	-0.105	-0.003	0.098	0.870
$ATREM_{i,t-1}$	7,727	-0.029	0.455	-2.207	-0.158	-0.003	0.136	1.754
Panel C: Firm characteristics								
$AT_{i,t-1}$	7,727	5,208,723	18,120,147	776	19,261	107,551	1,209,600	128,234,000
$IB_{i,t-1}$	7,727	349,050	1,440,068	-511,336	-1,190	2,252	46,957	10,866,000
$MACAP_{i,t-1}$	7,727	6,176,035	23,201,720	776	15,425	93,203	1,062,694	172,790,923
$SALE_{i,t-1}$	7,727	4,151,836	14,718,687	0	10,145	85,638	1,001,900	109,132,000
Panel D: Control variables								
$SEO_{i,t-1}$	7,727	0.273	0.445	0	0	0	1	1
$SIZE_{i,t-1}$	7,727	11.869	2.889	6.654	9.644	11.443	13.876	18.968
$MTB_{i,t-1}$	7,727	2.645	4.301	-11.854	0.936	1.742	3.154	27.638
$LEV_{i,t-1}$	7,727	0.176	0.194	0	0.005	0.130	0.272	0.996
$NOA_{i,t-1}$	7,727	0.494	0.260	-0.403	0.349	0.539	0.686	0.932
$ROA_{i,t-1}$	7,727	-0.056	0.334	-2.143	-0.054	0.036	0.080	0.323

Note: The table reports statistics of CEOs' characteristics variables, earnings management proxies and control variables for the UK sample from 2007 and 2012. Definitions of variables are in the Appendix.

5.5.2 Univariate analyses

Table 5-3 reports the mean abnormal accrual-based and real earnings management for each measure of CEO characteristics of M&A firms and the differences in abnormal accruals and real earnings activities for each CEO's characteristics of M&A firms (62 share-financed deal observations).

Panel A first reports the mean earnings management of CEOs with financial expertise (EXP = 1) and CEOs without financial expertise (EXP = 0) and the mean differences in earnings management between CEOs with and without financial expertise.

The results show that the abnormal accruals ($\mathrm{ATA\_JM}_{\mathrm{i,t-1}}$, $\mathrm{AWCA\_JM}_{\mathrm{i,t-1}}$, $\mathrm{ATA\_NJM}_{\mathrm{i,t-1}}$ and $\mathrm{AWCA\_MJM}_{\mathrm{i,t-1}}$) and abnormal real earnings management ($\mathrm{ACF}_{\mathrm{i,t-1}}$, $\mathrm{ADEXP}_{\mathrm{i,t-1}}$, $\mathrm{APROD}_{\mathrm{i,t-1}}$ and $\mathrm{ATREM}_{\mathrm{i,t-1}}$) of acquirers which have CEOs without financial expertise (EXP = 0) are significantly positive, whereas the abnormal accruals of acquirers which have CEOs with financial expertise (EXP= 1) are negative and insignificant. The results also show that acquirers which have CEOs without financial expertise inflate earnings significantly higher than those with CEOs with financial expertise, significant at the 5% and 10% levels. For real earnings management proxies, the abnormal real earnings management ($\mathrm{ACF}_{\mathrm{i,t-1}}$, $\mathrm{ADEXP}_{\mathrm{i,t-1}}$, $\mathrm{APROD}_{\mathrm{i,t-1}}$ and $\mathrm{ATREM}_{\mathrm{i,t-1}}$) of acquirers which have CEOs without financial expertise (EXP = 0) are positive and significant, with the exception of $\mathrm{ADEXP}_{\mathrm{i,t-1}}$ and $\mathrm{APROD}_{\mathrm{i,t-1}}$, whereas the abnormal real earnings management of acquirers which have CEOs with financial expertise (EXP= 1) are negative and insignificant. The results also show that acquirers which have CEOs without financial expertise manipulate real earnings activities significantly higher than those which have CEOs with financial expertise, especially cash flow, significant at the 5% level. The results initially suggest that CEOs without financial expertise manipulate real earnings activities to a greater extent than CEOs with financial expertise.

Second, Panel A reports the mean earnings management of CEOs with long tenure (TENURE = 1) and CEOs with short tenure (TENURE = 0) and the mean differences in earnings management between CEOs with long and short tenure. The results show that the abnormal accruals of acquirers which have CEOs with short tenure (TENURE = 0) are positive and significant, whereas the abnormal accruals of acquirers which have CEOs with long tenure (TENURE = 1) are negative and insignificant. The results also show that acquirers which have CEOs with short tenure inflate earnings to a considerably great extent than those which have CEOs with long tenure, significant at the 1% and 5% levels. For real earnings management proxies, the abnormal real earnings management of acquirers which have CEOs with long and short tenure (TENURE = 1 and TENURE = 0) are insignificant. The results also show that acquirers which have CEOs with short tenure manipulate real earnings activities to a greater extent than those which have CEOs with long tenure, but not significantly so.

Panel B of Table 5-3 reports the mean earnings management of CEOs with high reputation ($\mathrm{PRESS2}$ = 1 and $\mathrm{PRESS3}$ = 1) and CEOs with low reputation ($\mathrm{PRESS2}$ = 0 and $\mathrm{PRESS3}$ = 0) and the differences in earnings management between CEOs with high and low reputations. The results show that the abnormal accruals of acquirers which have CEOs with low reputation ($\mathrm{PRESS2}$ = 0 and $\mathrm{PRESS3}$ = 0) are positive and significant, whereas the abnormal accruals of acquirers which have CEOs with high reputation ($\mathrm{PRESS2}$ = 1 and $\mathrm{PRESS3}$ = 1) are negative and insignificant. The abnormal accruals of acquirers which have CEOs with low reputation ($\mathrm{PRESS2}$ = 0 and $\mathrm{PRESS3}$ = 0) are also significantly higher than those of acquirers which have CEOs with high reputation ($\mathrm{PRESS2}$ = 1 and $\mathrm{PRESS3}$ = 1), except for $\mathrm{AWCA\_JM}_{\mathrm{i,t-1}}$. However, the abnormal real earnings management of acquirers which have CEOs with low and high reputations ($\mathrm{PRESS2}$ = 0, $\mathrm{PRESS3}$ = 0, $\mathrm{PRESS2}$ = 1 and $\mathrm{PRESS3}$ = 1) are insignificant. The results also show that acquirers which have CEOs with low reputation manipulate real earnings activities to a greater extent than those which have CEOs with high reputation, but insignificantly so.

Table 5-3: Earnings management of share-financed acquirers with CEO characteristics

Panel A: Financial expertise and tenure

	$CERT = 1$	$CERT = 0$	Difference in means of $CERT = 1$ vs $CERT = 0$	$TENURE = 1$	$TENURE = 0$	Difference in means of $TENURE = 1$ vs $TENURE = 0$
$\mathrm{ATA\_JM}_{i,t-1}$	-0.0313	0.0520 **	-0.0833 *	-0.0594	0.0493 **	-0.1087 **
$\mathrm{AWCA\_JM}_{i,t-1}$	-0.0478	0.0500 **	-0.0979 **	-0.0824	0.0472 ***	-0.1297 **
$\mathrm{ATA\_MJM}_{i,t-1}$	-0.0439	0.0498 **	-0.0938 **	-0.0566	0.0417 **	-0.0983 **
$\mathrm{AWCA\_MJM}_{i,t-1}$	-0.0574	0.0453 **	-0.1028 **	-0.0788	0.0384 **	-0.1172 **
$\mathrm{ACF}_{i,t-1}$	-0.0590	0.1202 **	-0.1793 *	0.0157	0.0784	-0.0627
$\mathrm{APROD}_{i,t-1}$	-0.0440	0.0393	-0.0833	-0.0711	0.0411	-0.1122
$\mathrm{ADEXP}_{i,t-1}$	-0.0300	0.0521	-0.0821	0.0870	0.0126	0.0744
$\mathrm{ATREM}_{i,t-1}$	-0.0268	0.1731 **	-0.1999 *	-0.0781	0.1735	-0.2515
Observations	19	43	-24.0000	13	49	

Panel B: Reputation (Press2 coverage and press3 coverage)

	$PRESS2 = 1$	$PRESS2 = 0$	Difference in means of $PRESS2 = 1$ vs $PRESS2 = 0$	$PRESS3 = 1$	$PRESS3 = 0$	Difference in mean of $PRESS3 = 1$ vs $PRESS3 = 0$
$\mathrm{ATA\_JM}_{i,t-1}$	-0.0238	0.0440 **	-0.0678 *	-0.0239	0.0455 **	-0.0695 *
$\mathrm{AWCA\_JM}_{i,t-1}$	-0.0347	0.0391 **	-0.0738	-0.0329	0.0400 **	-0.0729
$\mathrm{ATA\_MJM}_{i,t-1}$	-0.0432	0.0435 **	-0.0867 *	-0.0421	0.0450 **	-0.0870 *
$\mathrm{AWCA\_MJM}_{i,t-1}$	-0.0513	0.0365 **	-0.0878 *	-0.0484	0.0374 **	-0.0858 *
$\mathrm{ACF}_{i,t-1}$	0.0203	0.0809	-0.0607	0.0199	0.0824	-0.0626
$\mathrm{APROD}_{i,t-1}$	0.1221	-0.0160	0.1381	0.1221	-0.0160	0.1381
$\mathrm{ADEXP}_{i,t-1}$	0.0685	0.0138	0.0547	0.0600	0.0157	0.0444
$\mathrm{ATREM}_{i,t-1}$	0.1481	0.1095	0.0386	0.1481	0.1095	0.0386
Observations	16	46		17	45	

Note: The table reports the mean and differences in mean earnings management for the share-financed acquirers with CEO characteristics in the UK sample from 2007 and 2012. $CERT = 1$ and $CERT = 0$ are CEOs with and without financial expertise. $TENURE = 1$ and $TENURE = 0$ are CEOs with long and short tenure. $PRESS2 = 1$ and $PRESS2 = 0$ are CEOs with high and low media coverage. $PRESS3 = 1$ and $PRESS3 = 0$ are CEOs with high and low media coverage. The difference in means are the differences in mean earnings management related to CEO characteristics. Significance is based on a one sample t-test for the mean and a two samples t-test for the difference in mean. ***, ** and * indicate 1%, 5% and 10% levels of significance respectively. Please see the Appendix for variable descriptions.

5.5.3 Multivariate analyses

5.5.3.1 CEO characteristics and earnings management of share-financed acquirers and the rest of the sample

The second main test is a regression to compare the earnings management of share-financed acquirers with high and low measures of CEO characteristics and the rest of the sample.

Table 5-4 reports the differences in mean abnormal accrual-based and real earnings managements for high and low levels of the CEO characteristics of M&A firms and the rest of the sample. Panel A reports the differences in mean earnings management of CEOs with financial expertise (EXP = 1) and the rest of the sample and the differences in mean earnings management of CEOs without financial expertise (EXP = 0) and the rest of the sample. The results show that the differences in mean abnormal accruals are positive and significant at the 1% and 5% levels for EXP = 0 and are negative and insignificant for EXP = 1. For abnormal real earnings management, the differences in mean abnormal cash flow ($\mathrm{ACF_{i,t-1}}$) and abnormal total real earnings management ($\mathrm{ATREM_{i,t-1}}$) are positive and significant at the 1% and 5% levels, while the differences in mean abnormal discretionary expenses ($\mathrm{ADEXP_{i,t-1}}$) and abnormal production costs ($\mathrm{APROD_{i,t-1}}$) are positive but insignificant. These results are consistent with H5.1.

Panel B in Table 5-4 reports the differences in mean earnings management of CEOs with long tenure (TENURE = 1) and the rest of the sample and the differences in mean earnings management of CEOs with short tenure (TENURE = 0) and the rest of the sample. The results show that the differences in mean abnormal accruals are positive and significant at the 1% level for TENURE = 0 and are negative and insignificant for TENURE = 1. For abnormal real earnings management, the differences in mean abnormal real earnings management are mixed and insignificant. These results are also consistent with H5.2.

Panel C in Table 5-4 reports the differences in mean earnings management of CEOs with high reputation (PRESS2 = 1) and the rest of the sample and the differences in mean earnings management of CEOs with low reputation (PRESS2 = 0) and the rest of the sample. The results show that the differences in mean abnormal accruals are positive and significant at the 1% and 5% levels for PRESS2 = 0, but are insignificant for PRESS2 = 1. For abnormal real earnings management, the differences in mean abnormal real earnings management for PRESS2 = 1 and PRESS2 = 0 are mixed and insignificant.

Panel D in Table 5-4 also reports the differences in the mean earnings management of CEOs with high reputation (PRESS3 = 1) and the rest of the sample and the differences in the mean earnings management of CEOs with low reputation (PRESS3 = 0) and the rest of the sample. The results show that the differences in mean abnormal accruals are positive and significant at the 1% and 5% levels for PRESS3 = 0, but insignificant for PRESS3 = 1. For abnormal real earnings management, the differences in mean abnormal real earnings management for PRESS3 = 1 and PRESS3 = 0 are mixed and insignificant. The results in Panels C and D in Table 5-4 indicate that CEOs with high reputation for both the PRESS2 and PRESS3 proxies are associated with lower accrual-based earnings management in the first year prior to the merger announcement. These results are also consistent with H5.3.

Table 5-4: Difference in mean earnings management of share-financed acquirers with CEOs 'characteristics and the rest of the sample

	Rest of the sample	$CERT = 1$	Difference in mean	Rest of the sample	$CERT = 0$	Difference in mean	
A. Financial expertise							
$\mathrm{ATA\_JM}_{i,t-1}$	-0.0101	-0.0313	-0.0212	-0.0105	0.0520	0.0626	**
$\mathrm{AWCA\_JM}_{i,t-1}$	-0.0174	-0.0478	-0.0305	-0.0178	0.0500	0.0678	***
$\mathrm{ATA\_MJM}_{i,t-1}$	-0.0096	-0.0439	-0.0343	-0.0101	0.0498	0.0599	***
$\mathrm{AWCA\_MJM}_{i,t-1}$	-0.0173	-0.0574	-0.0401	-0.0177	0.0453	0.0631	***
$\mathrm{ACF}_{i,t-1}$	-0.0076	-0.0590	-0.0515	-0.0084	0.1202	0.1286	**
$\mathrm{APROD}_{i,t-1}$	-0.0195	-0.0440	-0.0245	-0.0199	0.0393	0.0592	
$\mathrm{ADEXP}_{i,t-1}$	-0.0104	-0.0300	-0.0196	-0.0108	0.0521	0.0629	
$\mathrm{ATREM}_{i,t-1}$	-0.0285	-0.0268	0.0018	-0.0298	0.1731	0.2029	***
Observations	7,708	19		7,684	43		
	Rest of the sample	$TENURE = 1$	Difference in mean	Rest of the sample	$TENURE = 0$	Difference in mean	
B. Tenure							
$\mathrm{ATA\_JM}_{i,t-1}$	-0.0101	-0.0594	-0.0493	-0.0106	0.0493	0.0599	***
$\mathrm{AWCA\_JM}_{i,t-1}$	-0.0173	-0.0824	-0.0651	-0.0179	0.0472	0.0651	***
$\mathrm{ATA\_MJM}_{i,t-1}$	-0.0096	-0.0566	-0.0469	-0.0100	0.0417	0.0518	***
$\mathrm{AWCA\_MJM}_{i,t-1}$	-0.0173	-0.0788	-0.0615	-0.0178	0.0384	0.0562	***
$\mathrm{ACF}_{i,t-1}$	-0.0077	0.0157	0.0234	-0.0082	0.0784	0.0867	
$\mathrm{APROD}_{i,t-1}$	-0.0194	-0.0711	-0.0517	-0.0199	0.0411	0.0610	
$\mathrm{ADEXP}_{i,t-1}$	-0.0106	0.0870	0.0975	-0.0106	0.0126	0.0232	
$\mathrm{ATREM}_{i,t-1}$	-0.0285	-0.0781	-0.0496	-0.0299	0.1735	0.2033	
Observations	7,714	13		7,678	49		
	Rest of the sample	$PRESS2 = 1$	Difference in mean	Rest of the sample	$PRESS2 = 0$	Difference in mean	
C. Reputation (Press2 coverage)							
$\mathrm{ATA\_JM}_{i,t-1}$	-0.0102	-0.0238	-0.0136	-0.0105	0.0440	0.0545	**

$AWCA\_JM_{i,t-1}$	-0.0174	-0.0347	-0.0173	-0.0178	0.0391	0.0569	***
$ATA\_MJM_{i,t-1}$	-0.0096	-0.0432	-0.0336	-0.0100	0.0435	0.0535	***
$AWCA\_MJM_{i,t-1}$	-0.0173	-0.0513	-0.0340	-0.0177	0.0365	0.0542	**
$ACF_{i,t-1}$	-0.0078	0.0203	0.0280	-0.0082	0.0809	0.0892	
$APROD_{i,t-1}$	-0.0198	0.1221	0.1419	-0.0195	-0.0160	0.0035	
$ADEXP_{i,t-1}$	-0.0106	0.0685	0.0791	-0.0106	0.0138	0.0244	
$ATREM_{i,t-1}$	-0.0289	0.1481	0.1770	-0.0294	0.1095	0.1389	
Observations	7,711	16		7,681	46		
	Rest of the sample	$PRESS3 = 1$	Difference in mean	Rest of the sample	$PRESS3 = 0$	Difference in mean	
D. Reputation (Press3 coverage)							
$ATA\_JM_{i,t-1}$	-0.0102	-0.0239	-0.0138	-0.0105	0.0455	0.0561	**
$AWCA\_JM_{i,t-1}$	-0.0174	-0.0329	-0.0155	-0.0178	0.0400	0.0578	***
$ATA\_MJM_{i,t-1}$	-0.0096	-0.0421	-0.0324	-0.0100	0.0450	0.0550	***
$AWCA\_MJM_{i,t-1}$	-0.0173	-0.0484	-0.0311	-0.0177	0.0374	0.0551	**
$ACF_{i,t-1}$	-0.0078	0.0199	0.0276	-0.0082	0.0824	0.0907	
$APROD_{i,t-1}$	-0.0198	0.1221	0.1419	-0.0195	-0.0160	0.0035	
$ADEXP_{i,t-1}$	-0.0106	0.0600	0.0706	-0.0106	0.0157	0.0262	
$ATREM_{i,t-1}$	-0.0289	0.1481	0.1770	-0.0294	0.1095	0.1389	
Observations	7,710	17		7,682	45		

Note: The table reports the difference in mean earnings management for the share-financed acquirers with CEO characteristics and the rest of the sample in the UK sample from 2007 and 2012. The sample consists of 7,727 observations which include 62 share-financed acquirer observations. $EXP = 1$ and $EXP = 0$ are CEOs with and without financial expertise. $TENURE = 1$ and $TENURE = 0$ are CEOs with long and short tenure. $PRESS2 = 1$ and $PRESS2 = 0$ are CEOs with high and low press2 coverage. $PRESS3 = 1$ and $PRESS3 = 0$ are CEOs with high and low press3 coverage. Significance is based on a two samples t-tests for the difference in mean. ***, ** and * indicate 1%, 5% and 10% levels of significance respectively. Please see the Appendix for variable descriptions.

5.5.3.2 Correlation

Table 5-5 shows Pearson correlations among the selected variables, including abnormal accruals estimated from the Jones and modified Jones models, abnormal real earnings management proxies, CEO characteristics variables, and interactions between the CEO characteristic variables and the share-financed deal variables and control variables. The table indicates that share-financed acquirers with financial expertise ($\mathrm{EXP}_{\mathrm{i,t-1}}$*$\mathrm{SMA}_{\mathrm{i,t}}$), long tenure ($\mathrm{TENURE}_{\mathrm{i,t-1}}$*$\mathrm{SMA}_{\mathrm{i,t}}$) and high reputation (($\mathrm{PRESS2}_{\mathrm{i,t-1}}$*$\mathrm{SMA}_{\mathrm{i,t}}$) and ($\mathrm{PRESS3}_{\mathrm{i,t-1}}$*$\mathrm{SMA}_{\mathrm{i,t}}$)) are negatively correlated with abnormal total and working capital accruals estimated by the Jones model ($\mathrm{ATA\_JM}_{\mathrm{i,t-1}}$ and $\mathrm{AWCA\_JM}_{\mathrm{i,t-1}}$) and the modified Jones model ($\mathrm{ATA\_MJM}_{\mathrm{i,t-1}}$ and $\mathrm{AWCA\_MJM}_{\mathrm{i,t-1}}$), while there only share-financed acquirers with financial expertise ($\mathrm{EXP}_{\mathrm{i,t-1}}$*$\mathrm{SMA}_{\mathrm{i,t}}$) are negatively and significantly correlated with abnormal cash flow ($\mathrm{ACF}_{\mathrm{i,t-1}}$). These correlations are consistent with H5.1, H5.2 and H5.3. Moreover, the accrual-based earning management proxies are negatively correlated with $\mathrm{NOA}_{\mathrm{i,t-2}}$ and positively correlated with $\mathrm{LEV}_{\mathrm{i,t-2}}$ and $\mathrm{ROA}_{\mathrm{i,t-1}}$.

Table 5-5: Correlations

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)
(1) $\mathrm{ATA\_JM}_{i,t-1}$	1																					
(2) $\mathrm{AWCA\_JM}_{i,t-1}$	0.98	1																				
(3) $\mathrm{ATA\_MJM}_{i,t-1}$	0.97	0.95	1																			
(4) $\mathrm{AWCA\_MJM}_{i,t-1}$	0.96	0.97	0.98	1																		
(5) $\mathrm{ACF}_{i,t-1}$	0.08	0.07	0.07	0.06	1																	
(6) $\mathrm{ADEXP}_{i,t-1}$	0.09	0.09	0.09	0.09	-0.40	1																
(7) $\mathrm{APROD}_{i,t-1}$	*-0.02*	*-0.02*	-0.01	-0.01	0.20	0.22	1															
(8) $\mathrm{ATREM}_{i,t-1}$	0.15	0.14	0.14	0.14	0.17	0.78	0.34	1														
(9) $\mathrm{TENURE}_{i,t-1}$	*0.04*	*0.04*	*0.04*	0.05	*-0.03*	*-0.03*	-0.05	-0.05	1													
(10) $\mathrm{EXP}_{i,t-1}$	*0.02*	*0.02*	*0.02*	*0.02*	0.00	-0.01	*-0.03*	0.00	0.46	1												
(11) $\mathrm{PRESS2}_{i,t-1}$	0.02	0.02	0.01	0.02	-0.02	-0.02	*-0.02*	*-0.03*	0.34	0.40	1											
(12) $\mathrm{PRESS3}_{i,t-1}$	0.02	0.02	0.01	0.02	*-0.02*	-0.02	*-0.03*	*-0.03*	0.35	0.42	0.96	1										
(13) $\mathrm{SMA}_{i,t}$	*0.02*	*0.02*	*0.02*	*0.02*	*0.02*	0.01	0.01	*0.03*	0.00	0.01	0.02	0.02	1									
(14) $\mathrm{TENURE}_{i,t-1}*\mathrm{SMA}_{i,t}$	-0.01	-0.01	-0.02	-0.02	0.00	-0.01	0.02	0.00	0.08	*0.02*	*0.03*	*0.03*	0.46	1								
(15) $\mathrm{EXP}_{i,t-1}*\mathrm{SMA}_{i,t}$	-0.01	-0.01	-0.01	-0.01	-0.01	0.00	0.00	0.00	0.01	0.08	0.04	0.05	0.55	0.38	1							
(16) $\mathrm{PRESS2}_{i,t-1}*\mathrm{SMA}_{i,t}$	0.00	-0.01	-0.01	-0.01	0.00	0.01	0.01	0.02	0.02	*0.04*	0.10	0.09	0.51	0.41	0.57	1						
(17) $\mathrm{PRESS3}_{i,t-1}*\mathrm{SMA}_{i,t}$	0.00	-0.01	0.00	-0.01	0.00	0.01	0.01	0.02	0.02	*0.04*	0.09	0.10	0.52	0.40	0.61	0.97	1					
(18) $\mathrm{SIZE}_{i,t-2}$	0.01	0.02	0.01	0.01	-0.06	0.00	-0.01	-0.06	-0.10	-0.16	0.08	0.06	-0.05	-0.01	*-0.03*	-0.01	-0.01	1				
(19) $\mathrm{MTB}_{i,t-2}$	0.00	0.00	-0.01	-0.01	*0.02*	-0.06	*-0.04*	*-0.03*	0.01	0.02	*0.02*	*0.02*	0.01	0.01	-0.01	0.00	0.00	0.10	1			
(20) $\mathrm{LEV}_{i,t-2}$	*0.04*	*0.04*	*0.03*	*0.03*	*0.04*	*0.02*	*0.04*	*0.04*	-0.10	-0.08	*0.02*	0.01	*-0.02*	-0.01	*-0.02*	*-0.02*	*-0.02*	0.11	-0.08	1		
(21) $\mathrm{NOA}_{i,t-2}$	*-0.03*	*-0.03*	*-0.02*	*-0.02*	-0.11	0.13	0.01	0.05	-0.01	*-0.02*	0.00	0.00	*-0.03*	-0.01	-0.01	0.00	0.00	0.06	-0.18	0.19	1	
(22) $\mathrm{SEO}_{i,t-1}$	-0.05	-0.04	-0.05	-0.05	0.11	-0.05	*0.04*	*0.03*	*-0.03*	0.01	-0.07	-0.06	0.07	0.01	*0.03*	0.02	*0.02*	-0.19	0.07	0.01	0.00	1

Note: This table reports pooled Pearson correlations for the entire sample of 7,727 firm-years over the period 2007-2012. The values reported in italic indicate the corresponding coefficients are not significant at 5% level. Please see the Appendix for variable descriptions.

5.5.3.3 Financial expertise of CEOs and earnings management of share-financed acquirers

For abnormal total and working capital accruals from cash flows estimated using the Jones and modified Jones models with the intercept, Table 5-6 presents the results of the estimation of Equation 5-1, with EXP used in the model for year *t*-1 (one year prior to a merger announcement) and with different measures of accrual-based earnings management used as substitutes in the model. When abnormal total and working capital accruals ($\mathrm{ATA\_JM}_{i,t-1}$ and $\mathrm{AWCA\_JM}_{i,t-1}$) are estimated in Equation 5-1, the evidence shows that the coefficients of $\mathrm{EXP}_{i,t-1} * \mathrm{SMA}_{i,t}$ are negative and statistically significant at the 10% level (coefficients of $\mathrm{ATA\_JM}_{i,t-1}$ and $\mathrm{AWCA\_JM}_{i,t-1}$ are -0.063 and -0.072, respectively). Similarly, when abnormal total and working capital accruals ($\mathrm{ATA\_MJM}_{i,t-1}$ and $\mathrm{AWCA\_MJM}_{i,t-1}$) are used in Equation 5-1, the coefficients of $\mathrm{EXP}_{i,t-1} * \mathrm{SMA}_{i,t}$ are also negative and statistically significant at the 5% and 10% level (coefficients of $\mathrm{ATA\_MJM}_{i,t-1}$ and $\mathrm{AWCA\_MJM}_{i,t-1}$ are -0.070 and -0.073, respectively).

For real earnings management, Table 5-7 presents the results of the estimation of Equation 5-2, in which EXP is used in the model for year *t*-1 (one year prior to the merger announcement) and different measures of real earnings management are used as substitutes in the model. When abnormal real earnings management ($\mathrm{ACF}_{i,t-1}$, $\mathrm{ADEXP}_{i,t-1}$, $\mathrm{APROD}_{i,t-1}$ and $\mathrm{ATREM}_{i,t-1}$) are used in Equation 5-2, the evidence shows that the coefficients of $\mathrm{EXP}_{i,t-1} * \mathrm{SMA}_{i,t}$ are mixed (coefficients of $\mathrm{ACF}_{i,t-1}$, $\mathrm{ADEXP}_{i,t-1}$, $\mathrm{APROD}_{i,t-1}$ and $\mathrm{ATREM}_{i,t-1}$ are -0.186, 0.006, -0.056 and -0.145, respectively). Only the coefficients of $\mathrm{ACF}_{i,t-1}$ are significant and negative. In general, the results of Table 5-6 and Table 5-7 indicate the lack of financial expert CEOs $(\mathrm{EXP} = 0)$ in share-financed acquirers is associated with an increase in abnormal accruals and abnormal cash flow in year *t*-1 (one year prior to the merger announcement) and this increase is statistically significant. In other words, the presence of financial expert CEOs $(\mathrm{EXP} = 1)$ is correlated with a reduction in abnormal accruals and abnormal cash flow in year *t*-1. This evidence is consistent with H5.1.

Table 5-6: Financial expertise of CEOs and accrual-based earnings management of share-financed acquirers

	ATA_JM		AWCA_JM		ATA_MJM		AWCA_MJM	
Intercept	0.019	***	0.018	***	0.018	***	0.017	***
t-statistic	*3.16*		*2.62*		*2.99*		*2.57*	
$EXP_{i,t-1}$	0.004		0.003		0.004		0.003	
t-statistic	*1.31*		*0.85*		*1.23*		*0.86*	
$EXP_{i,t-1} * SMA_{i,t}$	-0.063	*	-0.072	*	-0.070	**	-0.073	*
t-statistic	*-1.8*		*-1.83*		*-2.01*		*-1.89*	
$SMA_{i,t}$	0.045	**	0.043	**	0.039	**	0.036	*
t-statistic	*2.32*		*2*		*2.02*		*1.67*	
$MTB_{i,t-2}$	0.001	***	0.001	**	0.001	***	0.001	**
t-statistic	*2.83*		*2.33*		*3.1*		*2.36*	
$SIZE_{i,t-2}$	-0.007	***	-0.008	***	-0.006	***	-0.007	***
t-statistic	*-11.21*		*-11.72*		*-11.3*		*-11.7*	
$ROA_{i,t-1}$	0.190	***	0.197	***	0.195	***	0.201	***
t-statistic	*39.59*		*36.92*		*41.34*		*38.33*	
$LEV_{i,t-2}$	0.045	***	0.049	***	0.044	***	0.049	***
t-statistic	*5.63*		*5.58*		*5.64*		*5.62*	
$SEO_{i,t-1}$	0.001		-0.003		0.003		-0.001	
t-statistic	*0.16*		*-0.79*		*0.96*		*-0.33*	
$NOA_{i,t-2}$	-0.062	***	-0.068	***	-0.062	***	-0.067	***
t-statistic	*-10.24*		*-9.99*		*-10.38*		*-10*	
Year Fixed Effects	*yes*		*yes*		*yes*		*Yes*	
Industry Fixed Effects	*yes*		*yes*		*yes*		*Yes*	
Adjusted. R^2	*0.23*		*0.21*		*0.24*		*0.22*	

Note: This table reports the results of OLS regression over the period from 2007 to 2012. The total sample includes 7,727 observations, including 19 share-financed deal observations for CEOs with financial expertise out of 62 share-financed deal observations. The regression is as follows:

$Y_{i,t-1} = \alpha + \beta_1(X_{i,t-1}) + \beta_2(X_{i,t-1} * SMA_{i,t}) + \beta_3(SMA_{i,t}) + \beta_4(MTB_{i,t-2}) + \beta_5(SIZE_{i,t-2}) + \beta_6(ROA_{i,t-1}) + \beta_7(LEV_{i,t-2}) + \beta_8(SEO_{i,t-1}) + \beta_9(NOA_{i,t-2}) + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t-1}$ (Equation 5-1).

$Y_{i,t-1}$ is replaced by $ATA\_JM_{i,t-1}$, $AWCA\_JM_{i,t-1}$, $ATA\_MJM_{i,t-1}$ and $AWCA\_MJM_{i,t-1}$. $X_{i,t-1}$ is placed by $EXP_{i,t-1}$. ***, ** and * indicate 1%, 5% and 10% levels of significance respectively. The independent variables are as defined in the Appendix.

Table 5-7: Financial expertise of CEOs and real earnings management of share-financed acquirers

	ACF		ADEXP		APROD		ATREM	
Intercept	-0.006		-0.009		0.037	**	-0.017	
t-statistic	*-1.32*		*-1.26*		*2.17*		*-2.28*	
$EXP_{i,t-1}$	0.004		-0.014		-0.014	**	-0.010	
t-statistic	*0.55*		*-1.17*		*-1.99*		*-0.74*	
$EXP_{i,t-1} * SMA_{i,t}$	-0.186	**	0.006		-0.056		-0.145	
t-statistic	*-2.42*		*0.05*		*-0.74*		*-1.04*	
$SMA_{i,t}$	0.141	***	0.010		0.043		0.161	**
t-statistic	*3.3*		*0.15*		*1.04*		*2.22*	
$MTB_{i,t-2}$	0.000		-0.003	***	-0.003	***	-0.002	**
t-statistic	*0.3*		*-3.22*		*-4.06*		*-1.98*	
$SIZE_{i,t-2}$	0.001		-0.006	***	0.003	**	-0.009	***
t-statistic	*0.65*		*-2.98*		*2.1*		*-3.97*	
$ROA_{i,t-1}$	-0.183	***	0.140	***	-0.119	***	-0.067	***
t-statistic	*-17.77*		*8.32*		*-11.23*		*-3.66*	
$LEV_{i,t-2}$	0.045	***	0.066	**	0.039	**	0.094	***
t-statistic	*2.62*		*2.37*		*2.28*		*3.11*	
$SEO_{i,t-1}$	0.056	***	-0.028	**	0.020	***	0.027	**
t-statistic	*7.34*		*-2.25*		*2.67*		*1.96*	
Year Fixed Effects	*Yes*		*yes*		*yes*		*Yes*	
Industry Fixed Effects	*Yes*		*yes*		*yes*		*Yes*	
Adjusted. R^2	*0.15*		*0.19*		*0.05*		*0.13*	

Note: This table reports the results of OLS regression over the period from 2007 to 2012. The total sample includes 7,727 observations, including 19 share-financed deal observations for CEOs with financial expertise out of 62 share-financed deal observations. The regression is as follows:

$Y_{i,t-1} = \alpha + \beta_1(X_{i,t-1}) + \beta_2(X_{i,t-1} * SMA_{i,t}) + \beta_3(SMA_{i,t}) + \beta_4(MTB_{i,t-2}) + \beta_5(SIZE_{i,t-2}) + \beta_6(ROA_{i,t-1}) + \beta_7(LEV_{i,t-2}) + \beta_8(SEO_{i,t-1}) + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t-1}$ (Equation 5-2).

$Y_{i,t-1}$ is replaced by $ACF_{i,t-1}$, $ADEXP_{i,t-1}$, $APROD_{i,t-1}$ and $ATREM_{i,t-1}$. $X_{i,t-1}$ is placed by $EXP_{i,t-1}$. ***, ** and * indicate 1%, 5% and 10% level of significance respectively. The independent variables are defined in the Appendix.

5.5.3.4 CEO tenure and earnings management of share-financed acquirers

Table 5-8 presents the results of main Equation 5-1, with TENURE used in the model, and abnormal total and working capital accruals were used. The coefficients of $\mathrm{TENURE_{i,t-1}} * \mathrm{SMA_{i,t}}$ are negative and statistically significant at the 5% and 1% levels (coefficients of $\mathrm{ATA\_JM_{i,t-1}}$ and $\mathrm{AWCA\_JM_{i,t-1}}$ are -0.105 and -0.130, respectively). Similarly, the findings of Equation 5-1 where abnormal total and working capital accruals estimated using the modified Jones model were used ($\mathrm{ATA\_MJM_{i,t-1}}$ and $\mathrm{AWCA\_MJM_{i,t-1}}$). The coefficient of $\mathrm{TENURE_{i,t-1}} * \mathrm{SMA_{i,t}}$ are also negative and statistically significant at the 5% and 1% levels (coefficients of $\mathrm{ATA\_MJM_{i,t-1}}$ and $\mathrm{AWCA\_MJM_{i,t-1}}$ are -0.101 and -0.123, respectively). In general, the results indicate CEOs with short tenure ($\mathrm{TENURE} = 0$) in share-financed acquirers is associated with an increase in abnormal accruals in year *t*-1 (one year prior to the merger announcement), and this increase is statistically significant.

For real earnings management, Table 5-9 presents the results of Equation 5-2, with TENURE used in the model for year *t*-1 and with different measures of real earnings management used as substitutes in the model. The evidence shows that the coefficients of $\mathrm{TENURE_{i,t-1}} * \mathrm{SMA_{i,t}}$ are insignificantly mixed (coefficients of $\mathrm{ACF_{i,t-1}}$, $\mathrm{ADEXP_{i,t-1}}$, $\mathrm{APROD_{i,t-1}}$ and $\mathrm{ATREM_{i,t-1}}$ are -0.045, -0.085, 0.091 and -0.206, respectively). In general, the results of Table 5-8 and Table 5-9 indicate CEOs with short tenure ($\mathrm{TENURE} = 0$) in share-financed acquirers is associated with an increase in abnormal accruals in year *t*-1 and this increase is statistically significant. This evidence is consistent with H5.2.

Table 5-8: CEO tenure and accrual-based earnings management of share-financed acquirers

	ATA_JM		AWCA_JM		ATA_MJM		AWCA_MJM	
Intercept	0.019	***	0.017	**	0.017	***	0.016	**
t-statistic	*3.09*		*2.45*		*2.88*		*2.34*	
$TENURE_{i,t-1}$	0.004		0.004		0.002		0.002	
t-statistic	*1.1*		*1.06*		*0.63*		*0.44*	
$TENURE_{i,t-1} * SMA_{i,t}$	-0.105	**	-0.130	***	-0.101	**	-0.123	***
t-statistic	*-2.54*		*-2.83*		*-2.48*		*-2.76*	
$SMA_{i,t}$	0.046	**	0.046	**	0.045	**	0.046	**
t-statistic	*2.55*		*2.3*		*2.55*		*2.36*	
$MTB_{i,t-2}$	0.001	***	0.001	**	0.001	***	0.001	**
t-statistic	*2.92*		*2.41*		*2.8*		*2.1*	
$SIZE_{i,t-2}$	-0.007	***	-0.008	***	-0.006	***	-0.006	***
t-statistic	*-11.37*		*-11.81*		*-10.46*		*-10.39*	
$ROA_{i,t-1}$	0.189	***	0.196	***	0.180	***	0.188	***
t-statistic	*39.46*		*36.79*		*38.38*		*36.22*	
$LEV_{i,t-2}$	0.045	***	0.050	***	0.024	***	0.020	**
t-statistic	*5.66*		*5.63*		*3.11*		*2.38*	
$SEO_{i,t-1}$	0.000		-0.003		-0.002		-0.007	
t-statistic	*0.12*		*-0.84*		*-0.57*		*-1.83*	
$NOA_{i,t-2}$	-0.062	***	-0.068	***	-0.057	***	-0.061	***
t-statistic	*-10.23*		*-9.97*		*-9.64*		*-9.34*	
Year Fixed Effects	*yes*		*yes*		*yes*		*yes*	
Industry Fixed Effects	*yes*		*yes*		*yes*		*yes*	
Adjusted. R^2	*0.23*		*0.22*		*0.19*		*0.18*	

Note: This table reports the results of OLS regression over the period from 2007 to 2012. The total sample includes 7,727 observations, including 13 share-financed deal observations for CEOs with long tenure out of 62 share-financed deal observations. The regression is as follows:

$Y_{i,t-1} = \alpha + \beta_1(X_{i,t-1}) + \beta_2(X_{i,t-1} * SMA_{i,t}) + \beta_3(SMA_{i,t}) + \beta_4(MTB_{i,t-2}) + \beta_5(SIZE_{i,t-2}) + \beta_6(ROA_{i,t-1}) + \beta_7(LEV_{i,t-2}) + \beta_8(SEO_{i,t-1}) + \beta_9(NOA_{i,t-2}) + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t-1}$ (Equation 5-1).

$Y_{i,t-1}$ is replaced by $ATA\_JM_{i,t-1}$, $AWCA\_JM_{i,t-1}$, $ATA\_MJM_{i,t-1}$ and $AWCA\_MJM_{i,t-1}$. $X_{i,t-1}$ is placed by $TENURE_{i,t-1}$. ***, ** and * indicate 1%, 5% and 10% levels of significance respectively. The independent variables are as defined in the Appendix.

Table 5-9: CEO tenure and real earnings management of share-financed acquirers

	ACF		ADEXP		APROD		ATREM	
Intercept	-0.004		-0.004		0.041	**	-0.008	
t-statistic	*-0.8*		*-0.56*		*2.46*		*-1.15*	
$TENURE_{i,t-1}$	-0.014	*	-0.033	**	-0.027	***	-0.052	***
t-statistic	*-1.75*		*-2.54*		*-3.56*		*-3.69*	
$TENURE_{i,t-1} * SMA_{i,t}$	-0.045		-0.085		0.091		-0.206	
t-statistic	*-0.5*		*-0.6*		*1.01*		*-1.33*	
$SMA_{i,t}$	0.092	**	0.029		0.009		0.163	**
t-statistic	*2.33*		*0.45*		*0.23*		*2.35*	
$MTB_{i,t-2}$	0.000		-0.003	***	-0.003	***	-0.002	*
t-statistic	*0.4*		*-3.18*		*-4.04*		*-1.88*	
$SIZE_{i,t-2}$	0.000		-0.006	***	0.002	**	-0.010	***
t-statistic	*0.36*		*-3.11*		*2.02*		*-4.32*	
$ROA_{i,t-1}$	-0.182	***	0.142	***	-0.118	***	-0.063	***
t-statistic	*-17.61*		*8.44*		*-11.06*		*-3.44*	
$LEV_{i,t-2}$	0.043	**	0.062	**	0.037	**	0.087	***
t-statistic	*2.48*		*2.25*		*2.13*		*2.9*	
$SEO_{i,t-1}$	0.055	***	-0.029	**	0.019	**	0.024	*
t-statistic	*7.24*		*-2.35*		*2.57*		*1.81*	
Year Fixed Effects	*Yes*		*yes*		*yes*		*yes*	
Industry Fixed Effects	*Yes*		*yes*		*yes*		*yes*	
Adjusted. R^2	*0.15*		*0.19*		*0.05*		*0.14*	

Note: This table reports the results of OLS regression over the period from 2007 to 2012. The total sample includes 7,727 observations, including 13 share-financed deal observations for CEOs with long tenure out of 62 share-financed deal observations. The regression is as follows:

$Y_{i,t-1} = \alpha + \beta_1(X_{i,t-1}) + \beta_2(X_{i,t-1} * SMA_{i,t}) + \beta_3(SMA_{i,t}) + \beta_4(MTB_{i,t-2}) + \beta_5(SIZE_{i,t-2}) + \beta_6(ROA_{i,t-1}) + \beta_7(LEV_{i,t-2}) + \beta_8(SEO_{i,t-1}) + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t-1}$ (Equation 5-2).

$Y_{i,t-1}$ is replaced by $ACF_{i,t-1}$, $ADEXP_{i,t-1}$, $APROD_{i,t-1}$ and $ATREM_{i,t-1}$. $X_{i,t-1}$ is placed by $TENURE_{i,t-1}$. ***, ** and * indicate 1%, 5% and 10% levels of significance respectively. The independent variables are defined in the Appendix.

5.5.3.5 Reputation of CEOs and earnings management of share-financed acquirers

Table 5-10 presents the results of the estimations of Equation 5-1, with $\mathrm{PRESS2}$ used in the model. The coefficients of $\mathrm{PRESS2}_{\mathrm{i,t-1}} * \mathrm{SMA}_{\mathrm{i,t}}$ are negative and significant at the 10% level when abnormal total and working capital accruals are estimated under the original Jones model (coefficients of $\mathrm{ATA\_JM}_{\mathrm{i,t-1}}$ and $\mathrm{AWCA\_JM}_{\mathrm{i,t-1}}$ are -0.060 and -0.061, respectively). The coefficients of $\mathrm{PRESS2}_{\mathrm{i,t-1}} * \mathrm{SMA}_{\mathrm{i,t}}$ are also negative and significant at the 5% and 10% levels when abnormal total and working capital accruals are estimated using the modified Jones models (the coefficient of $\mathrm{ATA\_MJM}_{\mathrm{i,t-1}}$ is -0.077 and $\mathrm{AWCA\_MJM}_{\mathrm{i,t-1}}$ is -0.075). The results are in line with H5.3 (that CEOs with high reputation ($\mathrm{PRESS2}$=1) are less likely to be involved in earnings management in one year prior to the merger announcement).

For real earnings management, Table 5-11 presents the results of the estimation of Equation 5-2, with $\mathrm{PRESS2}$ used in the model for year *t*-1 and with different measures of real earnings management used as substitutes in the model. The evidence shows that the coefficients of $\mathrm{PRESS2}_{\mathrm{i,t-1}} * \mathrm{SMA}_{\mathrm{i,t}}$ are mix and insignificant (coefficients of $\mathrm{ACF}_{\mathrm{i,t-1}}$, $\mathrm{ADEXP}_{\mathrm{i,t-1}}$, $\mathrm{APROD}_{\mathrm{i,t-1}}$ and $\mathrm{ATREM}_{\mathrm{i,t-1}}$ are -0.061, 0.126, 0.121 and 0.013, respectively). In general, the results of Table 5-10 and Table 5-11 indicate the low reputation CEOs ($\mathrm{PRESS2} = 0$) in share-financed acquirers are associated with an increase in abnormal accruals in year *t*-1 and this increase is statistically significant. This evidence is consistent with H5.3.

Table 5-10: PRESS2 coverage reputation of CEOs and accrual-based earnings management of share-financed acquirers

	ATA_JM		AWCA_JM		ATA_MJM		AWCA_MJM	
Intercept	0.020	***	0.019	***	0.020	***	0.019	***
t-statistic	*3.49*		*2.92*		*3.31*		*2.86*	
$PRESS2_{i,t-1}$	-0.002		-0.004		-0.001		-0.004	
t-statistic	*-0.45*		*-0.89*		*-0.36*		*-0.86*	
$PRESS2_{i,t-1} * SMA_{i,t}$	-0.060	*	-0.061	*	-0.077	**	-0.075	*
t-statistic	*-1.61*		*-1.47*		*-2.1*		*-1.82*	
$SMA_{i,t}$	0.041	**	0.037	*	0.037	**	0.033	
t-statistic	*2.2*		*1.78*		*2.01*		*1.59*	
$MTB_{i,t-2}$	0.001	***	0.001	**	0.001	***	0.001	**
t-statistic	*2.94*		*2.43*		*3.21*		*2.47*	
$SIZE_{i,t-2}$	-0.007	***	-0.008	***	-0.007	***	-0.008	***
t-statistic	*-11.54*		*-11.96*		*-11.62*		*-11.93*	
$ROA_{i,t-1}$	0.190	***	0.197	***	0.195	***	0.202	***
t-statistic	*39.64*		*36.97*		*41.39*		*38.38*	
$LEV_{i,t-2}$	0.044	***	0.049	***	0.044	***	0.049	***
t-statistic	*5.57*		*5.55*		*5.58*		*5.58*	
$SEO_{i,t-1}$	0.000		-0.003		0.003		-0.002	
t-statistic	*0.1*		*-0.87*		*0.89*		*-0.41*	
$NOA_{i,t-2}$	-0.062	***	-0.068	***	-0.062	***	-0.067	***
t-statistic	*-10.25*		*-10.01*		*-10.39*		*-10.02*	
Year Fixed Effects	*yes*		*yes*		*yes*		*yes*	
Industry Fixed Effects	*yes*		*yes*		*yes*		*yes*	
Adjusted. R^2	*0.23*		*0.21*		*0.24*		*0.22*	

Note: This table reports the results of OLS regression over the period from 2007 to 2012. The total sample includes 7,727 observations, including 19 share-financed deal observations for CEOs with high PRESS2 coverage reputation out of 62 share-financed deal observations. The regression is as follows:

$$Y_{i,t-1} = \alpha + \beta_1(X_{i,t-1}) + \beta_2(X_{i,t-1} * SMA_{i,t}) + \beta_3(SMA_{i,t}) + \beta_4(MTB_{i,t-2}) + \beta_5(SIZE_{i,t-2}) + \beta_6(ROA_{i,t-1}) + \beta_7(LEV_{i,t-2}) + \beta_8(SEO_{i,t-1}) + \beta_9(NOA_{i,t-2}) + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t-1}$$ (Equation 5-1).

$Y_{i,t-1}$ is replaced by $ATA\_JM_{i,t-1}$, $AWCA\_JM_{i,t-1}$, $ATA\_MJM_{i,t-1}$ and $AWCA\_MJM_{i,t-1}$. $X_{i,t-1}$ is placed by $PRESS2_{i,t-1}$. ***, ** and * indicate 1%, 5% and 10% levels of significance respectively. The independent variables are defined in the Appendix.

Table 5-11: PRESS2 coverage reputation of CEOs and real earnings management of share-financed acquirers

	ACF		ADEXP		APROD		ATREM	
Intercept	-0.005		-0.008		0.029	*	-0.015	*
t-statistic	*-1.07*		*-1.23*		*1.76*		*-2.2*	
$\mathrm{PRESS2}_{i,t-1}$	0.000		-0.023	*	-0.014	*	-0.023	
t-statistic	*-0.06*		*-1.68*		*-1.77*		*-1.51*	
$\mathrm{PRESS2}_{i,t-1} * \mathrm{SMA}_{i,t}$	-0.061		0.126		0.121		0.013	
t-statistic	*-0.75*		*0.93*		*1.5*		*0.09*	
$\mathrm{SMA}_{i,t}$	0.099	**	-0.015		-0.003		0.121	*
t-statistic	*2.42*		*-0.23*		*-0.07*		*1.71*	
$\mathrm{MTB}_{i,t-2}$	0.000		-0.003	***	-0.003	***	-0.002	*
t-statistic	*0.36*		*-3.2*		*-4.08*		*-1.94*	
$\mathrm{SIZE}_{i,t-2}$	0.001		-0.006	***	0.003	**	-0.008	***
t-statistic	*0.56*		*-2.77*		*2.51*		*-3.85*	
$\mathrm{ROA}_{i,t-1}$	-0.183	***	0.140	***	-0.119	***	-0.067	***
t-statistic	*-17.75*		*8.33*		*-11.25*		*-3.65*	
$\mathrm{LEV}_{i,t-2}$	0.045	***	0.068	**	0.042	**	0.095	***
t-statistic	*2.63*		*2.45*		*2.46*		*3.17*	
$\mathrm{SEO}_{i,t-1}$	0.056	***	-0.029	**	0.020	***	0.026	*
t-statistic	*7.3*		*-2.3*		*2.62*		*1.91*	
Year Fixed Effects	*yes*		*yes*		*yes*		*yes*	
Industry Fixed Effects	*yes*		*yes*		*yes*		*yes*	
Adjusted. R^2	*0.15*		*0.19*		*0.05*		*0.13*	

Note: This table reports the results of OLS regression over the period from 2007 to 2012. The total sample includes 7,727 observations, including 16 share-financed deal observations for CEOs with high PRESS2 coverage reputation out of 62 share-financed deal observations. The regression is as follows:

$Y_{i,t-1} = \alpha + \beta_1(X_{i,t-1}) + \beta_2(X_{i,t-1} * SMA_{i,t}) + \beta_3(SMA_{i,t}) + \beta_4(MTB_{i,t-2}) + \beta_5(SIZE_{i,t-2}) + \beta_6(ROA_{i,t-1}) + \beta_7(LEV_{i,t-2}) + \beta_8(SEO_{i,t-1}) + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t-1}$ (Equation 5-2).

$\mathrm{Y}_{i,t-1}$ is replaced by $\mathrm{ACF}_{i,t-1}$, $\mathrm{ADEXP}_{i,t-1}$, $\mathrm{APROD}_{i,t-1}$ and $\mathrm{ATREM}_{i,t-1}$. $\mathrm{X}_{i,t-1}$ is placed by $\mathrm{PRESS2}_{i,t-1}$. ***, ** and * indicate 1%, 5% and 10% levels of significance respectively. The independent variables are defined in the Appendix.

Table 5-12 presents the results of the estimations of Equation 5-1, with $\mathrm{PRESS3}$ used in the model. The coefficients of $\mathrm{PRESS3}_{\mathrm{i,t-1}} * \mathrm{SMA}_{\mathrm{i,t}}$ are negative and significant at the 10% level when abnormal total and working capital accruals are estimated using the original Jones model (coefficients of $\mathrm{ATA\_JM}_{\mathrm{i,t-1}}$ and $\mathrm{AWCA\_JM}_{\mathrm{i,t-1}}$ are -0.061 and -0.059, respectively). The coefficients of $\mathrm{PRESS3}_{\mathrm{i,t-1}} * \mathrm{SMA}_{\mathrm{i,t}}$ are also negative and statistically significant at the 5% and 10% levels when abnormal total and working capital accruals are estimated using the modified Jones models (the coefficient of $\mathrm{ATA\_MJM}_{\mathrm{i,t-1}}$ is -0.078 and $\mathrm{AWCA\_MJM}_{\mathrm{i,t-1}}$ are -0.072). The results are in line with H5.3 (CEOs with high reputation ($\mathrm{PRESS3}$=1) are less likely to be involved in earnings management in one year prior to the merger announcement).

For real earnings management, Table 5-13 presents the results of the estimations of Equation 5-2, with $\mathrm{PRESS3}$ used in the model for year *t*-1 and where different measures of real earnings management used as substitutes in the model. The evidence shows that the coefficients of $\mathrm{PRESS3}_{\mathrm{i,t-1}} * \mathrm{SMA}_{\mathrm{i,t}}$ are mix and insignificant (coefficients of $\mathrm{ACF}_{\mathrm{i,t-1}}$, $\mathrm{ADEXP}_{\mathrm{i,t-1}}$, $\mathrm{APROD}_{\mathrm{i,t-1}}$ and $\mathrm{ATREM}_{\mathrm{i,t-1}}$ are -0.060, 0.122, 0.100 and 0.014, respectively). In general, the results in Table 5-12 and Table 5-13 indicate the low reputation CEOs ($\mathrm{PRESS3} = 0$) in share-financed acquirers is associated with an increase in abnormal accruals in year *t*-1 and this increase is statistically significant. This evidence is consistent with H5.3.

Table 5-12: PRESS3 coverage reputation of CEOs and accrual-based earnings management of share-financed acquirers

	ATA_JM		AWCA_JM		ATA_MJM		AWCA_MJM	
Intercept	0.021	***	0.019	***	0.019	***	0.019	***
t-statistic	*3.46*		*2.89*		*3.28*		*2.83*	
$PRESS3_{i,t-1}$	-0.001		-0.003		-0.001		-0.003	
t-statistic	*-0.35*		*-0.79*		*-0.18*		*-0.67*	
$PRESS3_{i,t-1} * SMA_{i,t}$	-0.061	*	-0.059	*	-0.078	**	-0.072	*
t-statistic	*-1.67*		*-1.46*		*-2.16*		*-1.8*	
$SMA_{i,t}$	0.043	**	0.038	*	0.039	**	0.033	
t-statistic	*2.24*		*1.78*		*2.06*		*1.6*	
$MTB_{i,t-2}$	0.001	***	0.001	**	0.001	***	0.001	**
t-statistic	*2.93*		*2.42*		*3.2*		*2.46*	
$SIZE_{i,t-2}$	-0.007	***	-0.008	***	-0.007	***	-0.008	***
t-statistic	*-11.54*		*-11.97*		*-11.62*		*-11.95*	
$ROA_{i,t-1}$	0.190	***	0.197	***	0.195	***	0.202	***
t-statistic	*39.64*		*36.97*		*41.39*		*38.38*	
$LEV_{i,t-2}$	0.044	***	0.049	***	0.044	***	0.049	***
t-statistic	*5.56*		*5.54*		*5.57*		*5.58*	
$SEO_{i,t-1}$	0.000		-0.003		0.003		-0.002	
t-statistic	*0.11*		*-0.85*		*0.91*		*-0.39*	
$NOA_{i,t-2}$	-0.062	***	-0.068	***	-0.062	***	-0.067	***
t-statistic	*-10.25*		*-10*		*-10.39*		*-10.01*	
Year Fixed Effects	*yes*		*yes*		*Yes*		*yes*	
Industry Fixed Effects	*yes*		*yes*		*Yes*		*yes*	
Adjusted. R^2	*0.23*		*0.21*		*0.24*		*0.22*	

Note: This table reports the results of OLS regression over the period from 2007 to 2012. The total sample includes 7,727 observations, including 17 share-financed deal observations for CEOs with high PRESS3 coverage reputation out of 62 share-financed deal observations. The regression is as follows:

$Y_{i,t-1} = \alpha + \beta_1(X_{i,t-1}) + \beta_2(X_{i,t-1} * SMA_{i,t}) + \beta_3(SMA_{i,t}) + \beta_4(MTB_{i,t-2}) + \beta_5(SIZE_{i,t-2}) + \beta_6(ROA_{i,t-1}) + \beta_7(LEV_{i,t-2}) + \beta_8(SEO_{i,t-1}) + \beta_9(NOA_{i,t-2}) + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t-1}$ (Equation 5-1).

$Y_{i,t-1}$ is replaced by $ATA\_JM_{i,t-1}$, $AWCA\_JM_{i,t-1}$, $ATA\_MJM_{i,t-1}$ and $AWCA\_MJM_{i,t-1}$. $X_{i,t-1}$ is placed by $PRESS3_{i,t-1}$. ***, ** and * indicate 1%, 5% and 10% levels of significance respectively. The independent variables are defined in the Appendix.

Table 5-13: PRESS3 coverage reputation of CEOs and real earnings management of share-financed acquirers

	ACF		ADEXP		APROD		ATREM	
Intercept	-0.004		-0.009		0.030	*	-0.015	*
t-statistic	*-0.84*		*-1.36*		*1.79*		*-2.18*	
$PRESS3_{i,t-1}$	-0.003		-0.020		-0.016	**	-0.024	
t-statistic	*-0.43*		*-1.49*		*-2.02*		*-1.62*	
$PRESS3_{i,t-1} * SMA_{i,t}$	-0.060		0.122		0.100		0.014	
t-statistic	*-0.75*		*0.9*		*1.27*		*0.09*	
$SMA_{i,t}$	0.100	**	-0.015		0.001		0.121	*
t-statistic	*2.42*		*-0.23*		*0.02*		*1.7*	
$MTB_{i,t-2}$	0.000		-0.003	***	-0.003	***	-0.002	*
t-statistic	*0.37*		*-3.21*		*-4.07*		*-1.94*	
$SIZE_{i,t-2}$	0.001		-0.006	***	0.003	**	-0.009	***
t-statistic	*0.58*		*-2.8*		*2.5*		*-3.86*	
$ROA_{i,t-1}$	-0.183	***	0.140	***	-0.119	***	-0.067	***
t-statistic	*-17.74*		*8.32*		*-11.25*		*-3.65*	
$LEV_{i,t-2}$	0.045	***	0.067	**	0.042	**	0.095	***
t-statistic	*2.63*		*2.44*		*2.44*		*3.16*	
$SEO_{i,t-1}$	0.056	***	-0.028	**	0.020	***	0.026	*
t-statistic	*7.29*		*-2.28*		*2.61*		*1.91*	
Year Fixed Effects	*yes*		*yes*		*yes*		*yes*	
Industry Fixed Effects	*yes*		*yes*		*yes*		*yes*	
Adjusted. R^2	*0.15*		*0.19*		*0.05*		*0.13*	

Note: This table reports the results of OLS regression over the period from 2007 to 2012. The total sample includes 7,727 observations, including 17 share-financed deal observations for CEOs with high PRESS3 coverage reputation out of 62 share-financed deal observations. The regression is as follows:

$Y_{i,t-1} = \alpha + \beta_1(X_{i,t-1}) + \beta_2(X_{i,t-1} * SMA_{i,t}) + \beta_3(SMA_{i,t}) + \beta_4(MTB_{i,t-2}) + \beta_5(SIZE_{i,t-2}) + \beta_6(ROA_{i,t-1}) + \beta_7(LEV_{i,t-2}) + \beta_8(SEO_{i,t-1}) + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t-1}$ (Equation 5-2).

$Y_{i,t-1}$ is replaced by $ACF_{i,t-1}$, $ADEXP_{i,t-1}$, $APROD_{i,t-1}$ and $ATREM_{i,t-1}$.. $X_{i,t-1}$ is placed by $PRESS3_{i,t-1}$. ***, ** and * indicate 1%, 5% and 10% levels of significance respectively. The independent variables are defined in the Appendix.

5.5.4 Propensity score matching: two samples t-test.

Similar to sections 3.5.4 and 4.5.4, this chapter employs propensity score matching to deal with the misspecification by employing the regression framework to investigate the correlation between CEO characteristics and earnings management of share-financed acquirers prior to the merger announcement. Similar to sections 3.5.4 and 4.5.4, the study tests two samples t-test to control for differences in firm characteristics between (1) M&A deals sample and (2) the rest of the sample by using the propensity score matching method to match the five nearest observations based on ROA or basic characteristics (SIZE, LEV and MTB) of the rest of the sample and share-financed deals. The sampling process is as described in section 3.5.4. Consequently, matching samples are obtained of 372 firm-year observations which consist 62 M&A deal observations and 310 firms in the performance (ROA) control sample and 310 firms in the characteristics (SIZE, LEV and MTB) control sample. For the 62 M&A deal observations, the sample includes 19 and 43 share-financed acquirer observations with and without financial expertise, 13 and 49 share-financed acquirer observations with long and short tenure,16 and 46 share-financed acquirer observations with high and low reputation (PRESS2) and 17 and 45 share-financed acquirer observations with high and low reputation (PRESS3). For the 310 firm performance (ROA) and 310 firm characteristics (SIZE, LEV and MTB) control samples, 95 and 215 firm-year observations have ROA or firm characteristics matched to with the share-financed acquirer observations with and without financial expertise. The sample includes 65 and 245 firm-year observations with ROA or firm characteristics matched with the share-financed acquirer observations with long and short tenure respectively. The sample also includes 80 and 230 firm-year observations with ROA or firm characteristics matched with the share-financed acquirer observations with high and low reputation (PRESS2) and 85 and 225 firm-year observations with ROA or firm characteristics matched with the share-financed acquirer observations with high and low reputation (PRESS3) respectively.

5.5.4.1 ROA matching

Table 5-14 reports the differences in mean abnormal accrual-based and real earnings managements for high and low levels of each CEO characteristic of M&A firms and the ROA matched sample. Panel A reports the differences in mean earnings management of CEOs with financial expertise (EXP = 1) and the ROA matching sample and the differences in mean earnings management of CEOs without financial expertise (EXP = 0) and the ROA matched sample. The results show that the differences in mean abnormal accruals ($\mathrm{ATA\_JM_{i,t-1}}$, $\mathrm{AWCA\_JM_{i,t-1}}$, $\mathrm{ATA\_NJM_{i,t-1}}$ and $\mathrm{AWCA\_MJM_{i,t-1}}$) are positive and significant at the 5% and 10% levels for EXP = 0 and are positive but insignificant for EXP = 1. For abnormal real earnings management, only the difference in mean abnormal cash flow ($\mathrm{ACF_{i,t-1}}$) is positive and significant at the 10% level for EXP = 0. These results are consistent with H5.1, indicating that CEOs with financial expertise are associated with lower earnings management in the first year prior to the merger announcement.

Panel A in Table 5-14 also reports the differences in mean earnings management of CEOs with long tenure (TENURE = 1) and the ROA matched sample and the differences in mean earnings management of CEOs with short tenure (TENURE = 0) and the ROA matched sample. The results show that the differences in mean abnormal accruals ($\mathrm{ATA\_JM_{i,t-1}}$, $\mathrm{AWCA\_JM_{i,t-1}}$, $\mathrm{ATA\_NJM_{i,t-1}}$ and $\mathrm{AWCA\_MJM_{i,t-1}}$) are positive and significant at the 1% and 5% levels for TENURE = 0 and are negative and insignificant for TENURE = 0. For abnormal real earnings management, the differences in mean abnormal real earnings management are mixed and insignificant. These results indicate that CEOs with long tenure are associated with lower accrual-based earnings management in the first year prior to the merger announcement. The results are also consistent with H5.2.

Panel B in Table 5-14 reports the differences in the mean earnings management of CEOs with high reputation ($\mathrm{PRESS2}$ = 1) and the ROA matched sample and the differences in mean earnings management of CEOs with low reputation ($\mathrm{PRESS2}$ = 0) and the ROA matched sample. The results show that the differences in mean abnormal accruals ($\mathrm{ATA\_JM_{i,t-1}}$, $\mathrm{AWCA\_JM_{i,t-1}}$, $\mathrm{ATA\_NJM_{i,t-1}}$ and $\mathrm{AWCA\_MJM_{i,t-1}}$) are positive for $\mathrm{PRESS2}$ = 0 and $\mathrm{PRESS2}$ = 1, but only $\mathrm{ATA\_JM_{i,t-1}}$ and $\mathrm{AWCA\_JM_{i,t-1}}$ are significant for $\mathrm{PRESS2}$ = 0. For abnormal real earnings management, the differences in mean abnormal real earnings management for $\mathrm{PRESS2}$ = 1 and $\mathrm{PRESS2}$ = 0 are mixed and insignificant.

Panel B in Table 5-14 also reports the differences in the mean earnings management of CEOs with high reputation ($\mathrm{PRESS3}$ = 1) and the ROA matched sample and the differences in the mean earnings management of CEOs with low reputation ($\mathrm{PRESS3}$ = 0) and the ROA matched sample. The results show that the differences in mean abnormal accruals ($\mathrm{ATA\_JM_{i,t-1}}$, $\mathrm{AWCA\_JM_{i,t-1}}$, $\mathrm{ATA\_NJM_{i,t-1}}$ and $\mathrm{AWCA\_MJM_{i,t-1}}$) are positive for $\mathrm{PRESS3}$ = 0 and $\mathrm{PRESS3}$ = 1, but there are $\mathrm{ATA\_JM_{i,t-1}}$, $\mathrm{AWCA\_JM_{i,t-1}}$ and $\mathrm{ATA\_MJM_{i,t-1}}$ which are significant for $\mathrm{PRESS3}$ = 0. For abnormal real earnings management, the differences in mean abnormal real earnings management for $\mathrm{PRESS3}$ = 1 and $\mathrm{PRESS3}$ = 0 are mixed and insignificant. These results indicate that CEOs with high reputation for both the $\mathrm{PRESS2}$ and $\mathrm{PRESS3}$ proxies are associated with lower accrual-based earnings management in the first year prior to the merger announcement. The results are consistent with H5.3.

Table 5-14: The difference in mean earnings management of share-financed acquirers with CEOs 'characteristics and the propensity score matching approach with ROA matching sample

Panel A: Financial expertise and tenure

	Difference in mean				Difference in mean			
	$CERT = 1$		$CERT = 0$		$TENURE = 1$		$TENURE = 0$	
$\mathrm{ATA\_JM}_{i,t-1}$	0.028		0.054	**	-0.067		0.076	**
$\mathrm{AWCA\_JM}_{i,t-1}$	0.032		0.069	**	-0.087		0.096	***
$\mathrm{ATA\_MJM}_{i,t-1}$	0.014		0.047	*	-0.065		0.064	**
$\mathrm{AWCA\_MJM}_{i,t-1}$	0.022		0.058	**	-0.082		0.081	**
$\mathrm{ACF}_{i,t-1}$	-0.105		0.072	*	-0.073		0.042	
$\mathrm{APROD}_{i,t-1}$	-0.044		-0.004		0.044		-0.032	
$\mathrm{ADEXP}_{i,t-1}$	-0.114		0.029		-0.017		-0.015	
$\mathrm{ATREM}_{i,t-1}$	-0.095		0.075		-0.079		0.050	

Panel B: Reputation (Press2 coverage and press3 coverage)

	Difference in mean				Difference in mean			
	$PRESS2 = 1$		$PRESS2 = 0$		$PRESS3 = 1$		$PRESS3 = 0$	
$\mathrm{ATA\_JM}_{i,t-1}$	0.065		0.040	*	0.057		0.042	*
$\mathrm{AWCA\_JM}_{i,t-1}$	0.083		0.048	*	0.073		0.051	*
$\mathrm{ATA\_MJM}_{i,t-1}$	0.043		0.035		0.037		0.037	*
$\mathrm{AWCA\_MJM}_{i,t-1}$	0.065		0.040		0.056		0.043	
$\mathrm{ACF}_{i,t-1}$	0.033		0.012		0.036		0.011	
$\mathrm{APROD}_{i,t-1}$	0.055		-0.041		0.051		-0.042	
$\mathrm{ADEXP}_{i,t-1}$	-0.009		-0.018		-0.008		-0.018	
$\mathrm{ATREM}_{i,t-1}$	0.053		0.012		0.050		0.012	

Note: The table reports the difference in mean earnings management for the share-financed acquirers with CEO characteristics and propensity score matching approach with the ROA matched sample in the UK sample from 2007 and 2012. The matching sample consists of 372 firm-year observations which consist 62 M&A deal observations and 310 the firm performance (ROA) matched observations. $\mathrm{EXP} = 1$ and $\mathrm{EXP} = 0$ are CEOs with and without financial expertise. $\mathrm{TENURE} = 1$ and $\mathrm{TENURE} = 0$ are CEOs with long and short tenure. $\mathrm{PRESS2} = 1$ and $\mathrm{PRESS2} = 0$ are CEOs with high and low press2 coverage. $\mathrm{PRESS3} = 1$ and $\mathrm{PRESS3} = 0$ are CEOs with high and low press3 coverage. Significance is based on two samples t-tests for the difference in mean. ***, ** and * indicate 1%, 5% and 10% levels of significance respectively. Please see the Appendix for variable descriptions.

5.5.4.2 Characteristic matching

Table 5-15 reports the differences in mean abnormal accrual-based and real earnings managements for high and low levels of each CEO characteristic of M&A firms and the firm characteristic matched sample. Panel A reports the differences in the mean earnings management of CEOs with financial expertise (EXP = 1) and the firm characteristic matched sample and the differences in mean earnings management of CEOs without financial expertise (EXP = 0) and the firm characteristic matched sample. The results show that the differences in mean abnormal accruals are positive and significant at the 5% level for EXP = 0 and are negative and insignificant for EXP = 1. For abnormal real earnings management, there is the difference in mean abnormal cash flow ($\mathrm{ACF}_{\mathrm{i,t-1}}$) and abnormal total real earnings management ($\mathrm{ATREM}_{\mathrm{i,t-1}}$) are positive and significant. These results are consistent with section 5.5.4.1 and with H5.1.

Panel A in Table 5-15 also reports the differences in the mean earnings management of CEOs with long tenure (TENURE = 1) and the firm characteristic matched sample and the differences in mean earnings management of CEOs with short tenure (TENURE = 0) and the firm characteristic matched sample. The results show that the differences in mean abnormal accruals are positive and significant at the 1% and 5% levels for TENURE = 0 and are negative and insignificant for TENURE = 1. For abnormal real earnings management, there is the difference in mean abnormal real earnings management are mix and insignificant. The results are also consistent with section 5.5.4.1 and with H5.2.

Panel B in Table 5-15 reports the differences in the mean earnings management of CEOs with high reputation ($\mathrm{PRESS2}$ = 1) and the firm characteristic matched sample and the differences in the mean earnings management of CEOs with low reputation ($\mathrm{PRESS2}$ = 0) and the firm characteristic matched sample. The results show that the differences in mean abnormal accruals ($\mathrm{ATA\_JM}_{\mathrm{i,t-1}}$, $\mathrm{AWCA\_JM}_{\mathrm{i,t-1}}$, $\mathrm{ATA\_NJM}_{\mathrm{i,t-1}}$ and $\mathrm{AWCA\_MJM}_{\mathrm{i,t-1}}$) are positive and significant for $\mathrm{PRESS2}$ = 0 at the 5% and 10% levels, but insignificant for $\mathrm{PRESS2}$ = 1. For abnormal real earnings management, the differences in the mean abnormal real earnings management for $\mathrm{PRESS2}$ = 1 and $\mathrm{PRESS2}$ = 0 are mix and insignificant.

Panel B in Table 5-15 also reports the differences in the mean earnings management of CEOs with high reputation ($\mathrm{PRESS3}$ = 1) and the firm characteristic matched sample and the differences in the mean earnings management of CEOs with low reputation ($\mathrm{PRESS3}$ = 0) and the firm characteristic matched sample. The results show that the differences in the mean abnormal accruals is positive and significant for $\mathrm{PRESS3}$ = 0 at the 1% and 5% levels, but insignificant for $\mathrm{PRESS3}$ = 1. For abnormal real earnings management, the differences in the mean abnormal real earnings management for $\mathrm{PRESS3}$ = 1 and $\mathrm{PRESS3}$ = 0 are mix and insignificant. These results of Panel B in Table 5.5 indicate that CEOs with high reputation in both $\mathrm{PRESS2}$ and $\mathrm{PRESS3}$ proxies are associated with lower accrual-based earnings management in the first year prior to the merger announcement. The results are consistent with section 5.5.4.1 and with H5.3.

Table 5-15: The difference in mean earnings management of share-financed acquirers with CEOs 'characteristics and the propensity score matching approach with the characteristics matching sample

Panel A: Financial expertise and tenure

	Difference in mean				Difference in mean			
	$CERT = 1$		$CERT = 0$		$TENURE = 1$		$TENURE = 0$	
$\mathrm{ATA\_JM}_{i,t-1}$	-0.021		0.069	**	-0.094		0.077	***
$\mathrm{AWCA\_JM}_{i,t-1}$	-0.027		0.073	**	-0.115		0.084	***
$\mathrm{ATA\_MJM}_{i,t-1}$	-0.037		0.070	**	-0.088		0.070	**
$\mathrm{AWCA\_MJM}_{i,t-1}$	-0.039		0.069	**	-0.108		0.074	**
$\mathrm{ACF}_{i,t-1}$	-0.108		0.101	**	-0.075		0.066	
$\mathrm{APROD}_{i,t-1}$	-0.058		0.161		0.163		0.074	
$\mathrm{ADEXP}_{i,t-1}$	-0.007		0.128		0.115		0.081	
$\mathrm{ATREM}_{i,t-1}$	-0.107		0.323	**	0.146		0.205	

Panel B: Reputation (Press2 coverage and press3 coverage)

	Difference in mean				Difference in mean			
	$PRESS2 = 1$		$PRESS2 = 0$		$PRESS3 = 1$		$PRESS3 = 0$	
$\mathrm{ATA\_JM}_{i,t-1}$	0.008		0.053	*	0.005		0.059	**
$\mathrm{AWCA\_JM}_{i,t-1}$	0.011		0.053	*	0.008		0.061	**
$\mathrm{ATA\_MJM}_{i,t-1}$	-0.014		0.055	**	-0.020		0.058	***
$\mathrm{AWCA\_MJM}_{i,t-1}$	-0.007		0.051	*	-0.013		0.059	**
$\mathrm{ACF}_{i,t-1}$	0.027		0.070		-0.049		0.088	
$\mathrm{APROD}_{i,t-1}$	0.248		0.041		0.229		0.034	
$\mathrm{ADEXP}_{i,t-1}$	0.076		0.093		0.066		0.024	
$\mathrm{ATREM}_{i,t-1}$	0.218		0.183		0.212		0.170	

Note: The table reports the difference in mean earnings management for the share-financed acquirers with CEO characteristics and propensity score matching approach with the firm characteristic matched sample in the UK sample from 2007 and 2012. The matched sample consists of 372 firm-year observations which consist 62 M&A deal observations and 310 the firm characteristic matched observations. The sample consist of $\mathrm{EXP} = 1$ and $\mathrm{EXP} = 0$ are CEOs with and without financial expertise. $\mathrm{TENURE} = 1$ and $\mathrm{TENURE} = 0$ are CEOs with long and short tenure. $\mathrm{PRESS2} = 1$ and $\mathrm{PRESS2} = 0$ are CEOs with high and low press2 coverage. $\mathrm{PRESS3} = 1$ and $\mathrm{PRESS3} = 0$ are CEOs with high and low press3 coverage. Significance is based on two samples t-tests for the difference in mean. ***, ** and * indicate 1%, 5% and 10% levels of significance respectively. Please see the Appendix for variable descriptions.

5.6 ROBUSTNESS CHECKS

Similar to Chapters 3 and 4, this chapter applies the performance control approach (Kothari et al. 2005) to control for the effect of firm performance on accrual-based and real earnings management as a first robustness test. As previously described in section 3.6.1 in Chapter 3, in this process, ROA is added to the Jones and modified Jones models and the real earnings management models as a regressor to control for firm performance. Hence, the four abnormal accrual proxies estimated by the Jones and modified Jones models under the performance control approach with the intercept are $\mathrm{ATA\_JM\_PC}_{\mathrm{i,t-1}}$, $\mathrm{AWCA\_JM\_PC}_{\mathrm{i,t-1}}$, $\mathrm{ATA\_MJM\_PC}_{\mathrm{i,t-1}}$, and $\mathrm{AWCA\_MJM\_PC}_{\mathrm{i,t-1}}$ and the four abnormal real earnings management proxies are $\mathrm{ACF\_PC}_{\mathrm{i,t-1}}$, $\mathrm{ADEXP\_PC}_{\mathrm{i,t-1}}$, $\mathrm{APROD\_PC}_{\mathrm{i,t-1}}$, and $\mathrm{ATREM\_PC}_{\mathrm{i,t-1}}$. A regression is run with excluding the ROA control variables to investigate the effect of financial expertise, tenure and reputation of CEOs on accrual-based earnings management prior to the merger announcement. The regression is as follows.

Equation 5-3

$$
\begin{aligned}
Y_{i,t-1} = \alpha + \beta_1\left(X_{i,t-1}\right) + \beta_2\left(X_{i,t-1}\_SMA_{i,t}\right) + \beta_3\left(SMA_{i,t}\right) + \beta_4(MTB_{i,t-2}) \\
+ \beta_5(SIZE_{i,t-2}) + \beta_6(LEV_{i,t-2}) + \beta_7(NOA_{i,t-2}) + \beta_9(SEO_{i,t-1}) \\
+ Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t-1}
\end{aligned}
$$

$\mathrm{Y}_{\mathrm{i,t-1}}$ is replaced by abnormal total accruals estimated using the Jones and modified Jones models under the cash flow approach ($\mathrm{ATA\_JM\_PC}_{\mathrm{i,t-1}}$ and $\mathrm{ATA\_MJM\_PC}_{\mathrm{i,t-1}}$) and abnormal working capital estimated by the Jones and modified Jones models under the cash flow approach ($\mathrm{AWCA\_JM\_PC}_{\mathrm{i,t-1}}$ and $\mathrm{AWCA\_MJM\_PC}_{\mathrm{i,t-1}}$). Other variables are as explained in section 5.4.3.

In addition, a regression is run excluding both ROA and NOA for real earnings management, because previous research has shown that there is insignificant correlation between NOA and real earnings management. The regression is as follows:

Equation 5-4

$$Y_{i,t-1} = \alpha + \beta_1(X_{i,t-1}) + \beta_2(X_{i,t-1} * SMA_{i,t}) + \beta_3(SMA_{i,t}) + \beta_4(MTB_{i,t-2}) + \beta_5(SIZE_{i,t-2}) + \beta_6(LEV_{i,t-2}) + \beta_7(SEO_{i,t-1}) + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t-1}$$

$\mathrm{Y_{i,t-1}}$ is replaced with $\mathrm{ACF\_PC_{i,t-1}}$, $\mathrm{ADEXP\_PC_{i,t-1}}$, $\mathrm{APROD\_PC_{i,t-1}}$ and $\mathrm{ATREM\_PC_{i,t-1}}$. Other variables are explained in section 5.4.3 and the Appendix.

5.6.1 The financial expertise of CEOs and earnings management of share-financed acquirers

For accrual-based earnings management, Table 5-16 presents the results of the estimations of Equation 5-3, in which EXP is used in the model for year *t*-1 and different measures of accrual-based earnings management ($\mathrm{ATA\_JM\_PC_{i,t-1}}$, $\mathrm{AWCA\_JM\_PC_{i,t-1}}$, $\mathrm{ATA\_MJM\_PC_{i,t-1}}$ and $\mathrm{AWCA\_MJM\_PC_{i,t-1}}$) are used as substitutes. When abnormal total and working capital accruals were used ($\mathrm{ATA\_JM\_PC_{i,t-1}}$ and $\mathrm{AWCA\_JM\_PC_{i,t-1}}$) in Equation 5-3. The evidence shows that the coefficients of $\mathrm{EXP_{i,t-1}} * \mathrm{SMA_{i,t}}$ are negative and statistically significant at the 5% level (coefficients of $\mathrm{ATA\_JM\_PC_{i,t-1}}$ and $\mathrm{AWCA\_JM\_PC_{i,t-1}}$ are -0.068 and -0.074, respectively). Similarly, when abnormal total and working capital accruals ($\mathrm{ATA\_MJM\_PC_{i,t-1}}$ and $\mathrm{AWCA\_MJM\_PC_{i,t-1}}$) are used in Equation 5-3, the coefficients of $\mathrm{EXP_{i,t-1}} * \mathrm{SMA_{i,t}}$ are also negative and statistically significant at the

5% and 10% levels (coefficients of $\mathrm{ATA\_MJM\_PC}_{\mathrm{i,t-1}}$ and $\mathrm{AWCA\_MJM\_PC}_{\mathrm{i,t-1}}$ are -0.063 and -0.065, respectively).

In terms of real earnings management, Table 5-17 presents the results of the estimations of Equation 5-4, in which EXP is used in the model for year *t*-1 and different measures of real earnings management are used as substitutes. When abnormal real earnings management ($\mathrm{ACF\_PC}_{\mathrm{i,t-1}}$, $\mathrm{ADEXP\_PC}_{\mathrm{i,t-1}}$, $\mathrm{APROD\_PC}_{\mathrm{i,t-1}}$ and $\mathrm{ATREM\_PC}_{\mathrm{i,t-1}}$) are used in Equation 5-4, the evidence shows that the coefficients of $\mathrm{EXP}_{\mathrm{i,t-1}} * \mathrm{SMA}_{\mathrm{i,t}}$ are negative (coefficients of $\mathrm{ACF\_PC}_{\mathrm{i,t-1}}$, $\mathrm{ADEXP\_PC}_{\mathrm{i,t-1}}$, $\mathrm{APROD\_PC}_{\mathrm{i,t-1}}$ and $\mathrm{ATREM\_PC}_{\mathrm{i,t-1}}$ are -0.078, -0.211, -0.084 and -0.191, respectively). However, only the coefficients of $\mathrm{ACF}_{\mathrm{i,t-1}}$ are significantly negative. Therefore, there is no significant change from the main findings in this chapter.

Table 5-16: Financial expertise of CEOs and accrual-based earnings management under performance control approach of share-financed acquirers

	ATA_JM		AWCA_JM		ATA_MJM		AWCA_MJM	
Intercept	0.071	***	0.074	***	0.072	***	0.073	***
t-statistic	*10.08*		*9.16*		*10.21*		*9.15*	
$\mathrm{EXP_{i,t-1}}$	0.002		0.001		0.002		0.001	
t-statistic	*0.64*		*0.26*		*0.61*		*0.25*	
$\mathrm{EXP_{i,t-1}} * \mathrm{SMA_{i,t}}$	-0.068	**	-0.074	**	-0.063	**	-0.065	*
t-statistic	*-2.16*		*-2.09*		*-2*		*-1.85*	
$\mathrm{SMA_{i,t}}$	0.046	***	0.047	**	0.040	**	0.039	**
t-statistic	*2.65*		*2.38*		*2.27*		*1.99*	
$\mathrm{MTB_{i,t-2}}$	0.000		0.000		0.000		0.000	
t-statistic	*0.22*		*-0.31*		*0.45*		*-0.25*	
$\mathrm{SIZE_{i,t-2}}$	-0.003	***	-0.004	***	-0.003	***	-0.004	***
t-statistic	*-5.71*		*-6.62*		*-5.52*		*-6.5*	
$\mathrm{LEV_{i,t-2}}$	0.026	***	0.029	***	0.026	***	0.030	***
t-statistic	*3.68*		*3.63*		*3.67*		*3.75*	
$\mathrm{SEO_{i,t-1}}$	0.003		0.001		0.004		0.001	
t-statistic	*0.99*		*0.27*		*1.22*		*0.27*	
$\mathrm{NOA_{i,t-2}}$	-0.028	***	-0.030	***	-0.027	***	-0.031	***
t-statistic	*-5.08*		*-5.01*		*-5.07*		*-5.12*	
Year Fixed Effects	*yes*		*yes*		*Yes*		*Yes*	
Industry Fixed Effects	*yes*		*yes*		*Yes*		*Yes*	
Adjusted. R^2	*0.06*		*0.07*		*0.05*		*0.06*	

Note: This table reports the results of OLS regression over the period from 2007 to 2012. The total sample includes 7,727 observations, including 19 share-financed deal observations for CEOs with financial expertise out of 62 share-financed deal observations. The regression is as follows:

$Y_{i,t-1} = \alpha + \beta_1(X_{i,t-1}) + \beta_2(X_{i,t-1} * SMA_{i,t}) + \beta_3(SMA_{i,t}) + \beta_4(MTB_{i,t-2}) + \beta_5(SIZE_{i,t-2}) + \beta_6(LEV_{i,t-2}) + \beta_7(NOA_{i,t-2}) + \beta_9(SEO_{i,t-1}) + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t-1-k}$ (Equation 5-3).

$\mathrm{Y_{i,t-1}}$ is replaced by $\mathrm{ATA\_JM\_PC_{i,t-1}}$, $\mathrm{AWCA\_JM\_PC_{i,t-1}}$, $\mathrm{ATA\_MJM\_PC_{i,t-1}}$ and $\mathrm{AWCA\_MJM\_PC_{i,t-1}}$. $\mathrm{X_{i,t-1}}$ is placed by $\mathrm{EXP_{i,t-1}}$. ***, ** and * indicate 1%, 5% and 10% levels of significance respectively. The independent variables are defined in the Appendix.

Table 5-17: Financial expertise of CEOs and real earnings management under performance control approach of share-financed acquirers

	ACF		ADEXP		APROD		ATREM	
Intercept	-0.030	***	0.003		-0.050	***	-0.031	***
t-statistic	*-7.36*		*0.4*		*-3.28*		*-4.25*	
$EXP_{i,t-1}$	-0.006		-0.013		-0.017	**	-0.023	*
t-statistic	*-0.74*		*-1.06*		*-2.16*		*-1.74*	
$EXP_{i,t-1} * SMA_{i,t}$	-0.078	*	-0.211		-0.084		-0.191	
t-statistic	*-0.89*		*-1.46*		*-0.99*		*-1.22*	
$SMA_{i,t}$	0.046		0.046		0.051		0.112	
t-statistic	*0.89*		*0.6*		*1.09*		*1.37*	
$MTB_{i,t-2}$	0.002	***	-0.008	***	-0.002	***	-0.006	***
t-statistic	*3.06*		*-9.51*		*-2.92*		*-6.23*	
$SIZE_{i,t-2}$	-0.014	***	0.014	***	-0.005	***	-0.002	
t-statistic	*-10.56*		*7.17*		*-3.62*		*-0.93*	
$LEV_{i,t-2}$	0.076	***	0.052	*	0.050	***	0.109	***
t-statistic	*4.08*		*1.88*		*2.63*		*3.61*	
$SEO_{i,t-1}$	0.071	***	-0.056	***	0.038	***	0.013	
t-statistic	*8.29*		*-4.3*		*4.54*		*0.94*	
Year Fixed Effects	*yes*		*yes*		*yes*		*yes*	
Industry Fixed Effects	*yes*		*yes*		*yes*		*yes*	
Adjusted. R^2	*0.24*		*0.22*		*0.14*		*0.14*	

Note: This table reports the results of OLS regression over the period from 2007 to 2012. The total sample includes 7,727 observations, including 19 share-financed deal observations for CEOs with high financial expertise out of 62 share-financed deal observations. The regression is as follows:

$$Y_{i,t-1} = \alpha + \beta_1(X_{i,t-1}) + \beta_2(X_{i,t-1} * SMA_{i,t}) + \beta_3(SMA_{i,t}) + \beta_4(MTB_{i,t-2}) + \beta_5(SIZE_{i,t-2}) + \beta_6(LEV_{i,t-2}) + \beta_7(SEO_{i,t-1}) + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t-1-k}$$

(Equation 5-4).

$Y_{i,t-1}$ is replaced by $ACF\_PC_{i,t-1}$, $ADEXP\_PC_{i,t-1}$, $APROD\_PC_{i,t-1}$ and $ATREM\_PC_{i,t-1}$. $X_{i,t-1}$ is placed by $EXP_{i,t-1}$. ***, ** and * indicate 1%, 5% and 10% levels of significance respectively. The independent variables are defined in the Appendix.

5.6.2 CEO tenure and earnings management of share-financed acquirers

Table 5-18 presents the results of the estimations of Equation 5-3, in which TENURE is used in the model, and abnormal total and working capital accruals estimated by the Jones and modified Jones models under performance control approach were used. The coefficients of $\mathrm{TENURE_{i,t-1}} * \mathrm{SMA_{i,t}}$ are negative and statistically significant at the 10% and 5% levels (coefficients of $\mathrm{ATA\_JM\_PC_{i,t-1}}$ and $\mathrm{AWCA\_JM\_PC_{i,t-1}}$ are -0.071 and -0.086, respectively). When abnormal total and working capital accruals estimated using the modified Jones model ($\mathrm{ATA\_MJM\_PC_{i,t-1}}$ and $\mathrm{AWCA\_MJM\_PC_{i,t-1}}$), the coefficient of $\mathrm{TENURE_{i,t-1}} * \mathrm{SMA_{i,t}}$ are also negative and statistically significant at the 10% level (coefficients of $\mathrm{ATA\_MJM\_PC_{i,t-1}}$ and $\mathrm{AWCA\_MJM\_PC_{i,t-1}}$ are -0.063 and -0.078, respectively).

For real earnings management, Table 5-19 presents the results of Equation 5-4, where TENURE was used in the model for year t-1. The evidence shows that the coefficients of $\mathrm{TENURE_{i,t-1}} * \mathrm{SMA_{i,t}}$ are mix and insignificant when the dependent variable from Equation 5.4 replaced by $\mathrm{ACF\_PC_{i,t-1}}$, $\mathrm{ADEXP\_PC_{i,t-1}}$, $\mathrm{APROD\_PC_{i,t-1}}$ and $\mathrm{ATREM\_PC_{i,t-1}}$. In general, the results of Table 5-18 and Table 5-19 are consistent with the main test of this chapter.

Table 5-18: CEO tenure and accrual-based earnings management under the performance control approach of share-financed acquirers

	ATA_JM		AWCA_JM		ATA_MJM		AWCA_MJM	
Intercept	0.072	***	0.072	***	0.072	***	0.071	***
t-statistic	*10.12*		*9.07*		*10.21*		*9.02*	
$TENURE_{i,t-1}$	0.004		0.004		0.004		0.004	
t-statistic	*1.09*		*0.98*		*1.17*		*1.14*	
$TENURE_{i,t-1} * SMA_{i,t}$	-0.071	*	-0.086	**	-0.063	*	-0.078	*
t-statistic	*-1.91*		*-2.05*		*-1.69*		*-1.89*	
$SMA_{i,t}$	0.039	**	0.041	**	0.032	**	0.034	*
t-statistic	*2.41*		*2.22*		*2.01*		*1.87*	
$MTB_{i,t-2}$	0.000		0.000		0.000		0.000	
t-statistic	*0.29*		*-0.25*		*0.51*		*-0.2*	
$SIZE_{i,t-2}$	-0.003	***	-0.004	***	-0.003	***	-0.004	***
t-statistic	*-5.76*		*-6.63*		*-5.55*		*-6.48*	
$LEV_{i,t-2}$	0.027	***	0.030	***	0.027	***	0.031	***
t-statistic	*3.77*		*3.73*		*3.76*		*3.86*	
$SEO_{i,t-1}$	0.003		0.001		0.004		0.001	
t-statistic	*0.98*		*0.26*		*1.22*		*0.27*	
$NOA_{i,t-2}$	-0.027	***	-0.030	***	-0.027	***	-0.031	***
t-statistic	*-5.07*		*-5*		*-5.07*		*-5.12*	
Year Fixed Effects	*yes*		*yes*		*yes*		*yes*	
Industry Fixed Effects	*yes*		*yes*		*yes*		*yes*	
Adjusted. R^2	*0.06*		*0.07*		*0.05*		*0.06*	

Note: This table reports the results of OLS regression over the period from 2007 to 2012. The total sample includes 7,727 observations, including 13 share-financed deal observations for CEOs with long tenure out of 62 share-financed deal observations. The regression is as follows:

$Y_{i,t-1} = \alpha + \beta_1(X_{i,t-1}) + \beta_2(X_{i,t-1} * SMA_{i,t}) + \beta_3(SMA_{i,t}) + \beta_4(MTB_{i,t-2}) + \beta_5(SIZE_{i,t-2}) + \beta_6(LEV_{i,t-2}) + \beta_7(NOA_{i,t-2}) + \beta_9(SEO_{i,t-1}) + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t-1-k}$ (Equation 5-3).

$Y_{i,t-1}$ is replaced by $ATA\_JM\_PC_{i,t-1}$, $AWCA\_JM\_PC_{i,t-1}$, $ATA\_MJM\_PC_{i,t-1}$ and $AWCA\_MJM\_PC_{i,t-1}$. $X_{i,t-1}$ is placed by $TENURE_{i,t-1}$. ***, ** and * indicate 1%, 5% and 10% levels of significance respectively. The independent variables are defined in the Appendix.

Table 5-19: CEO tenure and real earnings management under performance control approach of share-financed acquirers

	ACF		ADEXP		APROD		ATREM	
Intercept	-0.026	***	0.007		-0.047	***	-0.021	***
t-statistic	*-6.38*		*1*		*-3.1*		*-2.99*	
$TENURE_{i,t-1}$	-0.025	***	-0.036	***	-0.037	***	-0.066	***
t-statistic	*-3.1*		*-2.81*		*-4.41*		*-4.86*	
$TENURE_{i,t-1} * SMA_{i,t}$	0.035		0.034		0.087		0.058	
t-statistic	*0.36*		*0.23*		*0.87*		*0.36*	
$SMA_{i,t}$	0.011		-0.020		0.008		0.048	
t-statistic	*0.22*		*-0.27*		*0.19*		*0.59*	
$MTB_{i,t-2}$	0.002	***	-0.008	***	-0.002	***	-0.006	***
t-statistic	*3.05*		*-9.52*		*-2.89*		*-6.26*	
$SIZE_{i,t-2}$	-0.014	***	0.014	***	-0.005	***	-0.003	
t-statistic	*-10.9*		*7.11*		*-3.76*		*-1.22*	
$LEV_{i,t-2}$	0.072	***	0.049	*	0.046	**	0.102	***
t-statistic	*3.89*		*1.77*		*2.41*		*3.41*	
$SEO_{i,t-1}$	0.070	***	-0.057	***	0.037	***	0.011	
t-statistic	*8.18*		*-4.39*		*4.37*		*0.79*	
Year Fixed Effects	*yes*		*yes*		*Yes*		*yes*	
Industry Fixed Effects	*yes*		*yes*		*Yes*		*yes*	
Adjusted. R^2	*0.24*		*0.23*		*0.15*		*0.15*	

Note: This table reports the results of OLS regression over the period from 2007 to 2012. The total sample includes 7,727 observations, including 13 share-financed deal observations for CEOs with long tenure out of 62 share-financed deal observations. The regression is as follows:

$$Y_{i,t-1} = \alpha + \beta_1(X_{i,t-1}) + \beta_2(X_{i,t-1} * SMA_{i,t}) + \beta_3(SMA_{i,t}) + \beta_4(MTB_{i,t-2}) + \beta_5(SIZE_{i,t-2}) + \beta_6(LEV_{i,t-2}) + \beta_7(SEO_{i,t-1}) + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t-1-k}$$

(Equation 5-4).

$Y_{i,t-1}$ is replaced by $ACF\_PC_{i,t-1}$, $ADEXP\_PC_{i,t-1}$, $APROD\_PC_{i,t-1}$ and $ATREM\_PC_{i,t-1}$. $X_{i,t-1}$ is placed by $TENURE_{i,t-1}$. ***, ** and * indicate 1%, 5% and 10% levels of significance respectively. The independent variables are defined in the Appendix.

5.6.3 Reputation of CEOs and earnings management of share-financed acquirers

Table 5-20 presents the results of the estimations of Equation 5-3, where $\mathrm{PRESS2}$ is used in the model. The results show that the coefficients of $\mathrm{PRESS2}_{i,t-1} * \mathrm{SMA}_{i,t}$ are negative and statistically significant at the 10% level when abnormal total and working capital accruals are estimated under the original Jones model (coefficients of $\mathrm{ATA\_JM\_PC}_{i,t-1}$ and $\mathrm{AWCA\_JM\_PC}_{i,t-1}$ are -0.023 and -0.012, respectively). The coefficients of $\mathrm{PRESS2}_{i,t-1} * \mathrm{SMA}_{i,t}$ are also negative and statistically significant at the 10% level when abnormal total and working capital accruals are estimated under the modified Jones model (the coefficient of $\mathrm{ATA\_MJM\_PC}_{i,t-1}$ is -0.025 and $\mathrm{AWCA\_MJM\_PC}_{i,t-1}$ are -0.013). For real earnings management, Table 5-21 presents the results of Equation 5-4, where $\mathrm{PRESS2}$ was used in the model for year *t*-1 and where different measures of real earnings management are used as substitutes in the model. The evidence shows that the coefficients of $\mathrm{PRESS2}_{i,t-1} * \mathrm{SMA}_{i,t}$ are mix and insignificant when the dependent variable from Equation 5-4 replaced by $\mathrm{ACF\_PC}_{i,t-1}$, $\mathrm{ADEXP\_PC}_{i,t-1}$, $\mathrm{APROD\_PC}_{i,t-1}$ and $\mathrm{ATREM\_PC}_{i,t-1}$.

Table 5-20: PRESS2 coverage reputation of CEOs and accrual-based earnings management under performance control approach of share-financed acquirers

	ATA_JM		AWCA_JM		ATA_MJM		AWCA_MJM	
Intercept	0.075	***	0.076	***	0.075	***	-0.075	***
t-statistic	*10.8*		*9.81*		*10.93*		*9.82*	
$\mathrm{PRESS2}_{\mathrm{i,t-1}}$	0.000		-0.002		0.000		-0.002	
t-statistic	*0*		*-0.45*		*0.02*		*-0.45*	
$\mathrm{PRESS2}_{\mathrm{i,t-1}} * \mathrm{SMA}_{\mathrm{i,t}}$	-0.023	*	-0.012	*	-0.025	*	-0.013	*
t-statistic	*-0.67*		*-0.33*		*-0.75*		*-0.35*	
$\mathrm{SMA}_{\mathrm{i,t}}$	0.031	*	0.027		0.027		0.022	
t-statistic	*1.85*		*1.44*		*1.59*		*1.18*	
$\mathrm{MTB}_{\mathrm{i,t-2}}$	0.000		0.000		0.000		0.000	
t-statistic	*0.29*		*-0.24*		*0.52*		*-0.19*	
$\mathrm{SIZE}_{\mathrm{i,t-2}}$	-0.003	***	-0.004	***	-0.003	***	-0.004	***
t-statistic	*-5.89*		*-6.73*		*-5.69*		*-6.6*	
$\mathrm{LEV}_{\mathrm{i,t-2}}$	0.026	***	0.029	***	0.026	***	0.030	***
t-statistic	*3.68*		*3.66*		*3.67*		*3.78*	
$\mathrm{SEO}_{\mathrm{i,t-1}}$	0.003		0.001		0.004		0.001	
t-statistic	*0.97*		*0.23*		*1.19*		*0.23*	
$\mathrm{NOA}_{\mathrm{i,t-2}}$	-0.028	***	-0.031	***	-0.027	***	-0.031	***
t-statistic	*-5.08*		*-5.01*		*-5.07*		*-5.13*	
Year Fixed Effects	*yes*		*yes*		*yes*		*yes*	
Industry Fixed Effects	*yes*		*yes*		*yes*		*yes*	
Adjusted. R^2	*0.06*		*0.07*		*0.05*		*0.06*	

Note: This table reports the results of OLS regression over the period from 2007 to 2012. The total sample includes 7,727 observations, including 16 share-financed deal observations for CEOs with high PRESS2 coverage reputation out of 62 share-financed deal observations. The regression is as follows:

$Y_{i,t-1} = \alpha + \beta_1(X_{i,t-1}) + \beta_2(X_{i,t-1} * SMA_{i,t}) + \beta_3(SMA_{i,t}) + \beta_4(MTB_{i,t-2}) + \beta_5(SIZE_{i,t-2}) + \beta_6(LEV_{i,t-2}) + \beta_7(NOA_{i,t-2}) + \beta_9(SEO_{i,t-1}) + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t-1-k}$ (Equation 5-3).

$\mathrm{Y}_{\mathrm{i,t-1}}$ is replaced by $\mathrm{ATA\_JM\_PC}_{\mathrm{i,t-1}}$, $\mathrm{AWCA\_JM\_PC}_{\mathrm{i,t-1}}$, $\mathrm{ATA\_MJM\_PC}_{\mathrm{i,t-1}}$ and $\mathrm{AWCA\_MJM\_PC}_{\mathrm{i,t-1}}$. $\mathrm{X}_{\mathrm{i,t-1}}$ is placed by $\mathrm{PRESS2}_{\mathrm{i,t-1}}$. ***, ** and * indicate 1%, 5% and 10% levels of significance respectively. The independent variables are defined in the Appendix.

Table 5-21: PRESS2 coverage reputation of CEOs and real earnings management under performance control approach of share-financed acquirers

	ACF		ADEXP		APROD		ATREM	
Intercept	-0.030	***	0.006		-0.056	***	-0.002	***
t-statistic	*-7.49*		*0.88*		*-3.84*		*-3.14*	
$PRESS2_{i,t-1}$	-0.012		-0.018		-0.017	*	-0.029	**
t-statistic	*-1.34*		*-1.31*		*-1.88*		*-1.98*	
$PRESS2_{i,t-1} * SMA_{i,t}$	-0.070		0.185		0.075		0.019	
t-statistic	*-0.73*		*1.16*		*0.84*		*0.11*	
$SMA_{i,t}$	0.038		-0.050		0.008		0.059	
t-statistic	*0.79*		*-0.69*		*0.18*		*0.74*	
$MTB_{i,t-2}$	0.002	***	-0.008	***	-0.002	***	-0.006	***
t-statistic	*3.09*		*-9.51*		*-2.93*		*-6.22*	
$SIZE_{i,t-2}$	-0.013	***	0.015	***	-0.004	***	-0.001	
t-statistic	*-10.53*		*7.56*		*-3.23*		*-0.52*	
$LEV_{i,t-2}$	0.077	***	0.055	**	0.054	***	0.112	***
t-statistic	*4.15*		*1.97*		*2.82*		*3.74*	
$SEO_{i,t-1}$	0.070	***	-0.057	***	0.037	***	0.012	
t-statistic	*8.23*		*-4.35*		*4.47*		*0.87*	
Year Fixed Effects	*yes*		*yes*		*yes*		*yes*	
Industry Fixed Effects	*yes*		*yes*		*yes*		*yes*	
Adjusted. R^2	*0.24*		*0.22*		*0.14*		*0.14*	

Note: This table reports the results of OLS regression over the period from 2007 to 2012. The total sample includes 7,727 observations, including 16 share-financed deal observations for CEOs with PRESS2 coverage reputation out of 62 share-financed deal observations. The regression is as follows:

$$Y_{i,t-1} = \alpha + \beta_1(X_{i,t-1}) + \beta_2(X_{i,t-1} * SMA_{i,t}) + \beta_3(SMA_{i,t}) + \beta_4(MTB_{i,t-2}) + \beta_5(SIZE_{i,t-2}) + \beta_6(LEV_{i,t-2}) + \beta_7(SEO_{i,t-1}) + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t-1-k}$$

(Equation 5-4).

$Y_{i,t-1}$ is replaced by $ACF\_PC_{i,t-1}$, $ADEXP\_PC_{i,t-1}$, $APROD\_PC_{i,t-1}$ and $ATREM\_PC_{i,t-1}$. $X_{i,t-1}$ is placed by $PRESS2_{i,t-1}$. ***, ** and * indicate 1%, 5% and 10% levels of significance respectively. The independent variables are defined in the Appendix.

Table 5-22 and Table 5-23 present the results of Equation 5-3 and Equation 5-4, where $\mathrm{PRESS3}$ is used in the models. The results are similar to the results of Table 5-20 and Table 5-21 when $\mathrm{PRESS3}$ is used in the Equation 5.3 and Equation 5.4. In general, the results of Table 5-20, Table 5-21, Table 5-22 and Table 5-23 indicate the CEOs with low reputation ($\mathrm{PRESS3} = 0$) in share-financed acquirers is associated with an increase in abnormal accruals in year *t*-1 (one year prior to the merger announcement) and this increase is statistically significant. Therefore, the conclusions from the main section remain qualitatively unchanged.

Table 5-22: PRESS3 coverage reputation of CEOs and accrual-based earnings management under performance control approach of share-financed acquirers

	ATA_JM		AWCA_JM		ATA_MJM		AWCA_MJM	
Intercept	0.075	***	0.076	***	0.074	***	-0.075	***
t-statistic	*10.77*		*9.79*		*10.9*		*-9.79*	
$PRESS3_{i,t-1}$	0.000		-0.001		0.001		-0.001	
t-statistic	*0.11*		*-0.3*		*0.21*		*-0.21*	
$PRESS3_{i,t-1} * SMA_{i,t}$	-0.024	*	-0.011	*	-0.026	*	-0.012	*
t-statistic	*-0.72*		*-0.31*		*-0.8*		*-0.33*	
$SMA_{i,t}$	0.032	*	0.027		0.027		0.022	
t-statistic	*1.86*		*1.42*		*1.61*		*1.16*	
$MTB_{i,t-2}$	0.000		0.000		0.000		0.000	
t-statistic	*0.29*		*-0.25*		*0.51*		*-0.19*	
$SIZE_{i,t-2}$	-0.003	***	-0.004	***	-0.003	***	-0.004	***
t-statistic	*-5.9*		*-6.74*		*-5.69*		*-6.62*	
$LEV_{i,t-2}$	0.026	***	0.029	***	0.026	***	0.030	***
t-statistic	*3.68*		*3.65*		*3.67*		*3.78*	
$SEO_{i,t-1}$	0.003		0.001		0.004		0.001	
t-statistic	*0.97*		*0.24*		*1.2*		*0.24*	
$NOA_{i,t-2}$	-0.028	***	-0.031	***	-0.027	***	-0.031	***
t-statistic	*-5.07*		*-5.01*		*-5.07*		*-5.12*	
Year Fixed Effects	*yes*		*yes*		*yes*		*yes*	
Industry Fixed Effects	*yes*		*yes*		*yes*		*yes*	
Adjusted. R^2	*0.06*		*0.07*		*0.05*		*0.06*	

Note: This table reports the results of OLS regression over the period from 2007 to 2012. The total sample includes 7,727 observations, including 17 share-financed deal observations for CEOs with high PRESS3 coverage reputation out of 62 share-financed deal observations. The regression is as follows:

$Y_{i,t-1} = \alpha + \beta_1(X_{i,t-1}) + \beta_2(X_{i,t-1} * SMA_{i,t}) + \beta_3(SMA_{i,t}) + \beta_4(MTB_{i,t-2}) + \beta_5(SIZE_{i,t-2}) + \beta_6(LEV_{i,t-2}) + \beta_7(NOA_{i,t-2}) + \beta_9(SEO_{i,t-1}) + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t-1-k}$ (Equation 5-3).

$Y_{i,t-1}$ is replaced by $ATA\_JM\_PC_{i,t-1}$, $AWCA\_JM\_PC_{i,t-1}$, $ATA\_MJM\_PC_{i,t-1}$ and $AWCA\_MJM\_PC_{i,t-1}$. $X_{i,t-1}$ is placed by $PRESS3_{i,t-1}$. ***, ** and * indicate 1%, 5% and 10% levels of significance respectively. The independent variables are defined in the Appendix.

Table 5-23: PRESS3 coverage reputation of CEOs and accrual-based earnings management under performance control approach of share-financed acquirers

	ACF		ADEXP		APROD		ATREM	
Intercept	-0.029	***	0.005		-0.056	***	-0.027	***
t-statistic	*-7.28*		*0.8*		*-3.8*		*-3.79*	
$PRESS3_{i,t-1}$	-0.015	*	-0.015		-0.018	**	-0.030	**
t-statistic	*-1.82*		*-1.13*		*-2.03*		*-2.13*	
$PRESS3_{i,t-1} * SMA_{i,t}$	-0.076		0.182		0.051		0.021	
t-statistic	*-0.83*		*1.15*		*0.58*		*0.12*	
$SMA_{i,t}$	0.043		-0.050		0.013		0.058	
t-statistic	*0.86*		*-0.69*		*0.29*		*0.74*	
$MTB_{i,t-2}$	0.002	***	-0.008	***	-0.002	***	-0.006	***
t-statistic	*3.09*		*-9.52*		*-2.92*		*-6.22*	
$SIZE_{i,t-2}$	-0.013	***	0.014	***	-0.004	***	-0.001	
t-statistic	*-10.53*		*7.55*		*-3.24*		*-0.54*	
$LEV_{i,t-2}$	0.077	***	0.055	**	0.054	***	0.112	***
t-statistic	*4.13*		*1.96*		*2.8*		*3.72*	
$SEO_{i,t-1}$	0.070	***	-0.057	***	0.037	***	0.012	
t-statistic	*8.23*		*-4.34*		*4.46*		*0.87*	
Year Fixed Effects	*yes*		*yes*		*yes*		*yes*	
Industry Fixed Effects	*yes*		*yes*		*yes*		*yes*	
Adjusted. R^2	*0.24*		*0.22*		*0.14*		*0.14*	

Note: This table reports the results of OLS regression over the period from 2007 to 2012. The total sample includes 7,727 observations, including 17 share-financed deal observations for CEOs with PRESS3 coverage reputation out of 62 share-financed deal observations. The regression is as follows:

$$Y_{i,t-1} = \alpha + \beta_1(X_{i,t-1}) + \beta_2(X_{i,t-1} * SMA_{i,t}) + \beta_3(SMA_{i,t}) + \beta_4(MTB_{i,t-2}) + \beta_5(SIZE_{i,t-2}) + \beta_6(LEV_{i,t-2}) + \beta_7(SEO_{i,t-1}) + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon_{i,t-1-k}$$

(Equation 5-4).

$Y_{i,t-1}$ is replaced by $ACF\_PC_{i,t-1}$, $ADEXP\_PC_{i,t-1}$, $APROD\_PC_{i,t-1}$ and $ATREM\_PC_{i,t-1}$. $X_{i,t-1}$ is placed by $PRESS3_{i,t-1}$. ***, ** and * indicate 1%, 5% and 10% levels of significance respectively. The independent variables are defined in the Appendix.

5.7 SUMMARY AND CONTRIBUTION

5.7.1 Summary

This chapter hypothesized that CEO characteristics affect the prevalence of earnings management behaviour in share-financed acquirers prior to the merger announcement. Using a sample of 7,727 firm-year observations of UK companies from 2007 to 2012 (62 observations with share-financed deals), there is consistent evidence that in the one year prior to deal announcement, the financial expertise, tenure and reputation of CEOs are associated with a reduction in abnormal accruals, which is used as a proxy for earnings management. However, when the proxy of earnings management is real earnings management, only the financial expertise of CEOs is associated with a reduction in abnormal cash flow. The correlations are statistically significant. The findings are robust as abnormal accruals and real earnings activities are measured in various ways.

5.7.2 Contribution

In general, the evidence contributes to the existing literature by providing new evidence on the relationship between CEO characteristics and earnings management in M&A deals. The findings also have some implications for practitioners.

5.7.2.1 Contribution to literature

The findings contribute to the growing literature investigating how CEO characteristics influence earnings management of acquirers prior to a merger announcement, while previous research has only focused on whether or not acquirers and targets engage in earnings management prior to the merger announcement (Louis 2004; Botsari and Meeks 2008).

Although financial expertise, tenure and reputation dimensions have been already found to affect earnings management. However, the effect of some CEO characteristics is mix. For example, Hirshleifer (1993) and Malmendier and Tate (2009) suggests that managers are motivated to affect corporate investment in a way that builds up their reputation rather than the wealth of shareholders. Therefore, they suggest that CEOs opportunistically inflate their firms' earnings. In contrast, Francis et al. (2008) also find that firms engaging in significant earnings management are more likely to hire CEOs with high reputations so that these CEOs can help to reduce earnings management in subsequent periods. The evidence suggests that there is a negative relationship between the reputation of CEOs and earnings management. Therefore, investigating how CEO characteristics affect earnings management in the M&A context giving a significant contribution. However, this thesis only investigates financial expertise, tenure and reputation dimensions while other dimensions such as age, gender, overconfidence, or power are not investigated because of constrained by data availability.

5.7.2.2 Contribution to practitioners

The evidence could also be useful for investors and auditors. For investors, they should be prudential when investing in acquirers with CEOs of low reputation, short tenure and without financial expertise because those managers are more likely to engage in earnings management in the first year prior to the merger announcement. Similarly, regarding auditors, they should be cautious when auditing financial statements of acquirers with CEOs of low reputation, short tenure and without financial expertise because the probable earnings management are high in the first year prior to the merger announcement.

CHAPTER 6: THESIS CONCLUSION

Blair (1995) stated that "Maximizing shareholder wealth has increasingly become the most important objective of corporate management, especially in an age of aggressive corporate acquisitions and the rising power of institutional investors". To maximize earnings, the managers of the company may make "managerial decisions that result in not reporting the short-term"(Ronen and Yaari 2008), but these decisions do not violate any accounting standards. Therefore, knowledge of earnings management is important for market participants to help them in making decisions.

The last two decades have seen rapid development in the literature on earnings management. However, there are many areas of earnings management that are still considerably under-researched. This thesis contributes to the earnings management literature in three main areas: earnings management prior to a merger announcement, the effect of board connections on earnings management prior to a merger announcement and the effect of CEO characteristics on earnings management prior to a merger announcement. This chapter summarizes the results and contributions of each chapter, discusses the limitations of the thesis and suggests some possible future lines of research.

6.1 THE MAIN FINDINGS AND CONTRIBUTIONS OF THE THESIS

Chapter 2 shows that share-financed acquiring firms have the motivation to inflate their earnings prior to a merger announcement to increase their share market price because the higher the share price prior to the merger announcement, the lower the share exchange rate. Hence, acquiring firms may purchase the target firms a lower cost by issuing fewer shares to swap with the target firms' shares. The literature review in Chapter 2 also shows the models used to estimate accrual-based earnings management and real earnings management. The Jones model and modified Jones model are extensively used to estimate the proxies of accrual-based earnings management. However, most models have misspecifications in estimating abnormal accruals.

Chapter 3 introduces the Benford's Law approach to detect earnings management. Following the Benford's Law method, the study estimates (1) FSD_SCORE which is the mean absolute deviation between the distribution of the first digits of reported figures in financial reports and the theoretical distribution from Benford's Law and (2) KSMAX which is the maximum of cumulative absolute deviations between the distribution of the first digits of reported figures in financial reports and the theoretical distribution from Benford's Law. A firm-year has a significantly high FSD_SCORE and/ or KSMAX than zero which mean that firm-year has errors in the financial statement in that firm-year and that firm engages in earnings management in that year.

Chapter 3 estimates the errors in financial statements, the abnormal accruals to detect accrual-based earnings management and the abnormal real earnings management to detect real earnings management for the 295 M&A deals from public UK acquirers in the period 2007 to 2012. The results in Chapter 3 show that share-financed acquiring firms inflate both accruals and real earnings activities prior to the merger announcement. However, there is no evidence that cash-financed acquiring firms inflate their accounting earnings prior to the merger announcement.

The findings of Chapter 3 document whether acquirers inflate their earnings prior to a merger announcement or whether this is just the result of measurement errors by examining errors in financial reports based on Benford's Law, assessing both abnormal total and working capital accruals using the Jones and modified Jones models and investigating abnormal real earnings management. The research contributes to the literature on earnings management prior to the merger announcement by demonstrating that Benford's Law is a reliable and effective method for detecting earnings management. Market participants could use this easily implementable approach for assessing errors in financial statements and detecting acquiring firms' earnings management.

Chapter 4 extends Chapter 3 by investigating the effect of board connections between acquirers and target firms on earnings management prior to the merger announcement. Previous research has revealed that the certainty of deal completion will increase if the acquirer has board connections with the target firm. The reason is that board connections help to improve information flow and decrease information asymmetry between the acquirer and target. Therefore, compared with acquirers without board connections, acquirers with board connections are more certain about deal completion than acquirers without board connection due to lower information asymmetry. Besides, previous research suggests that the successful rate of deal completion is negatively affected by earnings management acquirers and targets (Chen et al. 2011b; Marquardt and Zur 2015). Thus, acquirers with board connections may be more conservative than acquirers without board connections in engaging in earnings management if they are less certain about the deal completion.

Previous research has shown that acquiring firms have the motivation to choose strategically the time at which to engage in earnings management; if acquiring firms engage in extreme abnormal earnings management, they may face litigation and regulatory risk (Ball and Shivakumar 2008; Gong et al. 2008). Therefore, acquiring firms may engage in earnings management earlier prior to the merger announcement. Previous research also reveals that acquirers with board connections have a stronger bargaining position in the negotiations than acquirers without board connections. Hence, acquirers with board connections may use their advantage in negotiations to convince the target to accept the time and payment for the M&A deal which help acquiring firms strategically time their earnings manipulation to reduce the regulatory risk and potential litigation. In contrast to acquirers with board connections, those without board connections may manipulate real earnings activities instead of inflating accruals to reduce the regulatory risk potential for litigation.

Investigating the sample of 295 M&A deals in the UK from 2007 to 2012, it is apparent that share-financed acquirers with board connections engage in accounting of earnings in both the first and second years prior to a merger announcement, while share-financed acquirers without direct networks engage in real earnings management mainly in the first year prior to the merger announcement. However, there is no evidence concerning the effect of board connections on earnings management among cash-financed acquirers prior to the merger announcement. This study suggests that share-financed acquirers with board connections strategically choose the time of earnings management and are less conservative in doing so, while share-financed acquirers without board connections shift from accrual-based earnings management to real earnings management. Chapter 4 contributes to the literature by extending previous research on the effect of board connections on earnings management prior to the merger announcement as a new measure to estimate the effect of professional connections in corporate investments, while previous studies have paid attention to investigating value creation and destruction after M&A or announcement returns to estimate the effect of connections on corporate investments.

Chapter 5 investigates the effect of CEO characteristics on earnings management prior to a merger announcement by examining the CEOs' reputation, tenure and financial expertise as proxies of CEO characteristics. Previous studies have shown that there is a correlation between CEOs' reputation and earnings management, but the effects are mixed. On the one hand, CEOs with high reputation prioritize their reputation instead of attempting to increase the wealth of shareholders (Hirshleifer 1993; Malmendier and Tate 2009). On the other hand, CEOs with high reputation are hired by firms with high earnings management to reduce this in subsequent periods (Francis et al. 2008). This evidence indicates that earnings management is negatively correlated with CEOs' reputation.

Previous research also shows that firms with CEOs with financial expertise are more likely to have higher outcomes. Custódio and Metzger (2014) show that CEOs with financial expertise have an ability to access external funds in difficult credit situations and have flexible financial policies. In addition, Aier et al. (2005) show that the financial expertise of CFOs is negatively correlated with accounting restatement, while Custódio and Metzger (2013) show that CEOs with financial expertise have a better position in M&A negotiations. Therefore, acquirers might purchase targets at a lower price.

Regarding CEOs' tenure proxy, previous research shows that earnings management is greater in the earlier than later years of CEOs' service (Ali and Zhang 2015). The reason is that CEOs with long tenure are perceived as more talented than CEOs with short tenure. With a longer period in the role, CEOs with long tenure establish a reputation for managerial ability. Therefore, a long-tenured CEO will be less likely to engage in earnings management to protect their reputation (Ali and Zhang 2015). In contrast, CEOs with short tenure have incentives to avoid being judged as having low ability, which could lead to their dismissal or negatively affect their autonomy and future compensation (Kuang et al. 2014; Ali and Zhang 2015). Therefore, CEOs with short tenure are more likely to engage in earnings management.

By examining the sample of 62 share-financed M&A deals from 2007 to 2012, the study finds that share-financed acquirers which have CEOs with financial expertise, long tenure and high reputation inflate their earnings less than those which have CEOs without financial expertise and with low reputation. Chapter 5 contributes to the literature by providing evidence of the effects of CEO characteristics on earnings management prior to the merger announcement, which will also be useful for practitioners such as investors and auditors. Investors should be cautions when using information related to M&A announcements of acquirers with CEOs of a lower reputation, short tenure and lacking financial expertise because earnings are more likely to be manipulated in the first year before the merger announcement. Similarly, when auditing financial statements, auditors should particularly pay attention to firms in which the CEOs have less of a reputation, short tenure and a lack of financial expertise because the risks of earnings management are high in the first year before M&A.

6.2 LIMITATIONS OF THE THESIS AND SOME SUGGESTIONS FOR FUTURE RESEARCH

In examining the earnings management of acquiring firms prior to a merger announcement (Chapter 3), the effect of board connections on earnings management prior to a merger announcement (Chapter 4) and the effect of CEO characteristics on earnings management prior to a merger announcement (Chapter 5), the study has controlled for the main factors, such as firm size, firm leverage, growth opportunities, firm profitability, net operating assets, equity issuance, and industry and year effects. These could affect earnings management, as evidenced in the existing literature. However, there was no control for corporate governance factors, such as board size and CEO or chairman, because of the small M&A deal sample and limitation of the data resource. This limitation in controlling for possible factors is similar to other empirical research: it is impossible to control for all factors that could affect earnings management. However, future research investigating a larger M&A sample and including corporate governance factors could potentially enhance the quality of the findings.

In Chapter 4, board connections are affected by the network data constraints. Chapter 4 only investigates the board network sample, in which the directors of acquirers/targets are used to working or not for targets/acquirers prior to a merger announcement because of network data restrictions, while the social networks of directors also affect M&A activities. For example, Ishii and Xuan (2014) reveal that acquisitions are more likely to take place between two firms that are well connected to each other through social ties. Another board network data constraint of Chapter 4 lies in networks that are built on affiliations in terms of education (university), professional clubs or sports clubs. These networks could also build board director networks and affect earnings management prior to a merger announcement. Therefore, future research is invited to cover social networks, educational networks and professional and sports club networks of board directors, which might help to capture the deeper impact of board networks on earnings management prior to a merger announcement.

The main limitation of Chapter 5 is the lack of investigating of the role played by the CEOs' internal power and their personalities and aspects such as age, which can be considered CEO characteristics, due to the lack of quality data and the small M&A sample investigated. With regard to CEOs' internal power, Feng et al. (2011) find that powerful CEOs have the ability to collude with other executives or even force them to engage in earnings management. This is also consistent with other studies showing that the power of CEOs is a determinant of earnings management (Dechow et al. 1996a; Beneish 1997; Beneish 1999). For CEO age, previous research has shown that there is an effect of age of CEOs on earnings management. Huang et al. (2012), Serfling (2014) and Yim (2013) demonstrate that younger CEOs are less likely to engage in earnings managements than older CEOs. Therefore, future research including CEOs' internal power and age as proxies for the effect of CEO characteristics on earnings management prior to a merger announcement could broadly capture the effects of all such aspects.

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APPENDIX: VARIABLE DEFINITIONS

$ATA\_JM_{i,t} = \frac{TA_{i,t}}{A_{i,t-1}} - [\hat{\alpha} + \hat{\beta}_1(\frac{1}{A_{i,t-1}}) + \hat{\beta}_2(\frac{\Delta REV_{i,t}}{A_{i,t-1}}) + \hat{\beta}_3\,(\frac{PPE_{i,t}}{A_{i,t-1}})$, denotes abnormal total accruals under the cash flow approach using the Jones model for firm *i* in year *t*. $\hat{\alpha}, \hat{\beta}_1, \hat{\beta}_2$ and $\hat{\beta}_3$ are the estimated coefficients from the following regression, which is run in each industry-year with at least 6 observations: $\frac{TA_{i,t}}{A_{i,t-1}} = \alpha + \beta_1(\frac{1}{A_{i,t-1}}) + \beta_2(\frac{\Delta REV_{i,t}}{A_{i,t-1}}) + \beta_3\,(\frac{PPE_{i,t}}{A_{i,t-1}}) + \varepsilon_{i,t}$, where $\mathrm{TA}_{\mathrm{i,t}}$ denotes total accruals calculated under the cash flow approach for firm *i* in year *t*, which is equal to the difference between net income before extraordinary items ($\mathrm{NI}_{\mathrm{i,t}}$) as reported in the cash flow statement and cash flow from operation ($\mathrm{CF}_{\mathrm{i,t}}$); $\mathrm{A}_{\mathrm{i,t-1}}$ comprises the total assets of firm *i* at the end of year *t*–1; $\Delta\mathrm{REV}_{\mathrm{i,t}}$ is the changes in sales from year *t*–1 to year *t* of firm *i*; $\mathrm{PPE}_{\mathrm{i,t}}$ is gross plant, property and equipment of firm *i* at the end of year *t*.

$ATA\_MJM_{i,t} = \frac{TA\_CF_{i,t}}{A_{i,t-1}} - [\hat{\alpha} + \hat{\beta}_1(\frac{1}{A_{i,t-1}}) + \hat{\beta}_2(\frac{\Delta REV_{i,t} - \Delta REC_{i,t}}{A_{i,t-1}}) + \hat{\beta}_3\,(\frac{PPE_{i,t}}{A_{i,t-1}})]$, is estimates the abnormal total accruals using the modified Jones model for firm *i* in year *t*. $\hat{\alpha}, \hat{\beta}_1, \hat{\beta}_2$ and $\hat{\beta}_3$ are the estimated coefficients from the following regression, which is run in each industry-year with at least 6 observations: $\frac{TA_{i,t}}{A_{i,t-1}} = \alpha + \beta_1(\frac{1}{A_{i,t-1}}) + \beta_2(\frac{\Delta REV_{i,t}}{A_{i,t-1}}) + \beta_3\,(\frac{PPE_{i,t}}{A_{i,t-1}}) + \varepsilon_{i,t}$.

$AWCA\_JM_{i,t} = \frac{WCA_{i,t}}{A_{i,t-1}} - [\hat{\alpha} + \hat{\beta}_1(\frac{1}{A_{i,t-1}}) + \hat{\beta}_2(\frac{\Delta REV_{i,t}}{A_{i,t-1}}) + \hat{\beta}_3\,(\frac{PPE_{i,t}}{A_{i,t-1}})]$, estimates the abnormal working capital accruals under the cash flow approach using the Jones model of firm *i* in year *t*. $\hat{\alpha}, \hat{\beta}_1, \hat{\beta}_2$ and $\hat{\beta}_3$ are the estimated coefficients from the following regression, which is run in each industry-year with at least 6 observations: $\frac{WCA_{i,t}}{A_{i,t-1}} = \alpha + \beta_1(\frac{1}{A_{i,t-1}}) + \beta_2(\frac{\Delta REV_{i,t}}{A_{i,t-1}}) + \beta_3\,(\frac{PPE_{i,t}}{A_{i,t-1}}) + \varepsilon_{i,t}$, where $\mathrm{WCA}_{\mathrm{i,t}}$

denotes working capital accruals calculated under the cash flow approach for firm *i* in year *t*, which are equal to the difference between net income before extraordinary items ($\mathrm{NI}_{\mathrm{i,t}}$) as reported in the cash flow statement and operating cash flow which excludes depreciation and amortization ($\mathrm{CF}_{\mathrm{i,t}}$ - $\mathrm{D\&A}_{\mathrm{i,t}}$).

$AWCA\_MJM_{i,t} = \frac{WCA_{i,t}}{A_{i,t-1}} - [\hat{\alpha} + \hat{\beta}_1(\frac{1}{A_{i,t-1}}) + \hat{\beta}_2(\frac{\Delta REV_{i,t} - \Delta REC_{i,t}}{A_{i,t-1}}) + \hat{\beta}_3\ (\frac{PPE_{i,t}}{A_{i,t-1}})]$, estimates the abnormal working capital accruals using the modified Jones model for firm *i* in year *t*. $\hat{\alpha}, \hat{\beta}_1, \hat{\beta}_2\ and\ \hat{\beta}_3$ are the estimated coefficients from the following regression, which is run in each industry-year with at least 6 observations: $\frac{WCA_{i,t}}{A_{i,t-1}} = \alpha + \beta_1(\frac{1}{A_{i,t-1}}) + \beta_2(\frac{\Delta REV_{i,t}}{A_{i,t-1}}) + \beta_3\ (\frac{PPE_{i,t}}{A_{i,t-1}}) + \varepsilon_{i,t}$.

$\mathrm{ACF}_{\mathrm{i,t}}$ denotes abnormal cash flow, which is the actual cash flow minus the normal cash flow calculated using the estimated coefficients from regression: $\frac{\mathrm{CF}_{it}}{\mathrm{A}_{it-1}} = \alpha_0 + \beta_1 \frac{1}{\mathrm{A}_{t-1}} + \ \beta_2 \frac{REV_{it}}{\mathrm{A}_{it-1}} + \beta_3 \frac{\Delta\mathrm{REV}_{it}}{\mathrm{A}_{it-1}} + \varepsilon_{it}$, and multiplied by -1.

$\mathrm{ADEXP}_{\mathrm{i,t}}$ denotes abnormal discretionary expense, i.e. the actual DEXP minus the normal DEXP calculated using the estimated coefficients from regression:$\frac{\mathrm{DISEXP}_{it}}{\mathrm{A}_{it-1}} = \alpha_0 + \beta_1 \frac{1}{\mathrm{A}_{it-1}} + \ \beta_2 \frac{REV_{it-1}}{\mathrm{A}_{it-1}} + \varepsilon_{it}$, and multiplied by -1.

$\mathrm{APROD}_{\mathrm{i,t}}$ represents the abnormal production costs, namely the actual PROD minus the normal PROD calculated using the estimated coefficients from regression:$\frac{\mathrm{PROD}_{it}}{\mathrm{A}_{it-1}} = \alpha_0 + \beta_1 \frac{1}{\mathrm{A}_{it-1}} + \ \beta_2 \frac{REV_{it}}{\mathrm{A}_{it-1}} + \beta_3 \frac{\Delta\mathrm{REV}_{it}}{\mathrm{A}_{it-1}} + \beta_4 \frac{\Delta\mathrm{REV}_{it-1}}{\mathrm{A}_{it-1}} + \ \varepsilon_{it}$

$\mathrm{ATREM}_{\mathrm{i,t}}$ is the sum of $\mathrm{ACF}_{\mathrm{i,t}}$, $\mathrm{ADEXP}_{\mathrm{i,t}}$ and $\mathrm{APROD}_{\mathrm{i,t}}$.

$ATA\_JM\_PC_{i,t} = \frac{TA_{i,t}}{A_{i,t-1}} - [\hat{\alpha} + \hat{\beta}_1(\frac{1}{A_{i,t-1}}) + \hat{\beta}_2(\frac{\Delta REV_{i,t}}{A_{i,t-1}}) + \hat{\beta}_3\ (\frac{PPE_{i,t}}{A_{i,t-1}}) + \hat{\beta}_4 ROA_{i,t}]$ estimates abnormal total accruals under the performance control approach using the Jones model for firm *i* in year *t*. $\hat{\alpha}, \hat{\beta}_1, \hat{\beta}_2, \hat{\beta}_3$ and $\hat{\beta}_4$ are estimated from the following equation, which is run in each industry-year with at least 6 observations: $\frac{TA_{i,t}}{A_{i,t-1}} = \alpha + \beta_1(\frac{1}{A_{i,t-1}}) + \beta_2(\frac{\Delta REV_{i,t}}{A_{i,t-1}}) + \beta_3\ (\frac{PPE_{i,t}}{A_{i,t-1}}) + \beta_4 ROA_{i,t-1} + \varepsilon_{i,t}$.

$ATA\_MJM\_PC_{i,t} = \frac{TA_{i,t}}{A_{i,t-1}} - \left[\hat{\alpha} + \hat{\beta}_1\left(\frac{1}{A_{i,t-1}}\right) + \hat{\beta}_2\left(\frac{\Delta REV_{i,t} - \Delta REC_{i,t}}{A_{i,t-1}}\right) + \hat{\beta}_3\ \left(\frac{PPE_{i,t}}{A_{i,t-1}}\right) + \hat{\beta}_4 ROA_{i,t}\right]$ estimates abnormal total accruals under the performance control approach using the modified Jones model for firm *i* in year *t*. $\hat{\alpha}, \hat{\beta}_1, \hat{\beta}_2, \hat{\beta}_3$ and $\hat{\beta}_4$ are estimated from the following equation, which is run in each industry-year with at least 6 observations: $\frac{TA_{i,t}}{A_{i,t-1}} = \alpha + \beta_1(\frac{1}{A_{i,t-1}}) + \beta_2(\frac{\Delta REV_{i,t}}{A_{i,t-1}}) + \beta_3\ (\frac{PPE_{i,t}}{A_{i,t-1}}) + \beta_4 ROA_{i,t-1} + \varepsilon_{i,t}$.

$AWCA\_JM\_PC_{i,t} = \frac{WAC_{i,t}}{A_{i,t-1}} - [\hat{\alpha} + \hat{\beta}_1(\frac{1}{A_{i,t-1}}) + \hat{\beta}_2(\frac{\Delta REV_{i,t}}{A_{i,t-1}}) + \hat{\beta}_3\ (\frac{PPE_{i,t}}{A_{i,t-1}}) + \hat{\beta}_4 ROA_{i,t}]$ estimates the abnormal working capital accruals under the performance control approach using the Jones model for firm *i* in year *t*. $\hat{\alpha}, \hat{\beta}_1, \hat{\beta}_2, \hat{\beta}_3$ and $\hat{\beta}_4$ estimated from the following equation, which is run in each industry-year with at least 6 observations: $\frac{WACA_{i,t}}{A_{i,t-1}} = \alpha + \beta_1(\frac{1}{A_{i,t-1}}) + \beta_2(\frac{\Delta REV_{i,t}}{A_{i,t-1}}) + \beta_3\ (\frac{PPE_{i,t}}{A_{i,t-1}}) + \beta_4 ROA_{i,t-1} + \varepsilon_{i,t}$.

$AWCA\_MJM\_PC_{i,t} = \frac{WAC_{i,t}}{A_{i,t-1}} - \left[\hat{\alpha} + \hat{\beta}_1\left(\frac{1}{A_{i,t-1}}\right) + \hat{\beta}_2\left(\frac{\Delta REV_{i,t} - \Delta REC_{i,t}}{A_{i,t-1}}\right) + \hat{\beta}_3\ \left(\frac{PPE_{i,t}}{A_{i,t-1}}\right) + \hat{\beta}_4 ROA_{i,t}\right]$ estimates the abnormal working capital accruals under the performance control approach using the modified Jones model for firm *i* in year *t*. $\hat{\alpha}, \hat{\beta}_1, \hat{\beta}_2, \hat{\beta}_3$ and $\hat{\beta}_4$ estimated from the following equation, which is run in each industry-year with at least 6 observations: $\frac{WAC_{i,t}}{A_{i,t-1}} = \alpha + \beta_1(\frac{1}{A_{i,t-1}}) + \beta_2(\frac{\Delta REV_{i,t}}{A_{i,t-1}}) + \beta_3\ (\frac{PPE_{i,t}}{A_{i,t-1}}) + \beta_4 ROA_{i,t-1} + \varepsilon_{i,t}$.

$\mathrm{ACF\_PC_{i,t}}$ denotes the abnormal cash flow under the performance control approach, which is the actual cash flow minus the normal cash flow calculated using the estimated coefficients from regression: $\frac{\mathrm{CF\_PC}_{it}}{\mathrm{A}_{it-1}} = \alpha_0 + \alpha_1 \frac{1}{\mathrm{A}_{t-1}} + \beta_1 \frac{REV_{it}}{\mathrm{A}_{it-1}} + \beta_2 \frac{\Delta\mathrm{REV}_{it}}{\mathrm{A}_{it-1}} + \mathrm{ROA}_{i,t} + \varepsilon_{it}$. , and multiplied by -1.

$\mathrm{ADEXP\_PC_{i,t}}$ is abnormal DEXP under the performance control approach, which is the actual DEXP minus the normal DEXP_PC calculated using the estimated coefficients from regression: $\frac{\mathrm{DISEXP\_PC}_{it}}{\mathrm{A}_{it-1}} = \alpha_0 + \beta_1 \frac{1}{\mathrm{A}_{it-1}} + \beta_2 \frac{\mathrm{REV}_{it-1}}{\mathrm{A}_{it-1}} + \beta_3 ROA_{i,t-1} + \varepsilon_{it}$, and multiplied by -1.

$\mathrm{APROD\_PC_{i,t}}$ is abnormal PROD under the performance control approach, which is the actual PROD minus the normal PROD_PC calculated using the estimated coefficients from regression: $\frac{\mathrm{PROD\_PC}_{it}}{\mathrm{A}_{it-1}} = \alpha_0 + \beta_1 \frac{1}{\mathrm{A}_{it-1}} + \beta_2 \frac{REV_{it}}{\mathrm{A}_{it-1}} + \beta_3 \frac{\Delta\mathrm{REV}_{it}}{\mathrm{A}_{it-1}} + \beta_4 \frac{\Delta\mathrm{REV}_{it-1}}{\mathrm{A}_{it-1}} + \beta_5 ROA_{i,t-1} + \varepsilon_{it}$

$\mathrm{ATREM\_PC_{i,t}}$ is the sum of $\mathrm{ACF\_PC_{i,t}}$, $\mathrm{ADEXP\_PC_{i,t}}$ and $\mathrm{APROD\_PC_{i,t}}$.

$\mathrm{SIZE_{i,t-1}}$ is defined as the market value of equity of firm *i* at the end of year *t*-1.

$\mathrm{MTB_{i,t-1}}$ is the market-to-book ratio, defined as the market value of equity of firm *i* at the end of year *t*-1 divided by the book value of equity of firm *i* at the end of year *t*-1.

$\mathrm{LEV_{i,t-1}}$ is defined as the total of long-term and short-term debts of firm *i* at the end of year *t*-1 divided by the total assets of firm *i* at the end of year *t*-1.

$\mathrm{NOA}_{i,t-1}$ is defined as the total of book value of equity, long-term and short-term debts, cash and equivalents of firm *i* at the end of year *t*-1, all divided by the sales of firm *i* in year *t*-1.

$\mathrm{SEO}_{i,t}$ takes the value of 1 if the firm engaged in an SEO in year *t*, and zero otherwise. An SEO is identified when (1) the number of common shares outstanding increases by more than 5%, and (2) the proceeds from sale/issuing stocks are positive.

$\mathrm{ROA}_{i,t}$ is calculated as profit before extraordinary items for firm *i* in year *t* divided by the total assets of firm *i* at the end of year *t-1*.

$\mathrm{SMA}_{i,t}$ is a dummy which is set to 1 for share-financed acquiring firms *i* in year *t*, zero otherwise.

$\mathrm{CMA}_{i,t}$ is a dummy which is set to 1 for cash-financed acquiring firms *i* in year *t*, zero otherwise.

$\mathrm{SMA\_WOBC}_{i,t}$ is a dummy which takes the value 1 if share-financed acquiring firm *i* has no board connections in year *t*, zero otherwise.

$\mathrm{SMA\_WBC}_{i,t}$ is a dummy which takes the value 1 if share-financed acquiring firm *i* has board connections in year *t*, zero otherwise.

$\mathrm{CMA\_WOBC}_{i,t}$ is a dummy which takes the value 1 if cash-financed acquiring firm *i* has no board connections in year *t*, zero otherwise.

$\mathrm{CMA\_WBC}_{i,t}$ is a dummy which takes the value 1 if cash-financed acquiring firm *i* has board connections in year *t*, zero otherwise.

$\mathrm{EXP}_{i,t}$ is a dummy variable which takes the value 1 if the CEO of firm *i* in year *t* had a Master of Business Administration degree or a Chartered Accountant certification accredited by the FRC (2016) or equivalent, or had worked as a CFO in the past, zero otherwise.

$\mathrm{TENURE}_{i,t}$ is a dummy variable which takes the value 1 if the years of tenure in the role for the CEO of firm *i* in year *t* is higher than average of years in the role of other CEOs in the same industry, zero otherwise.

$\mathrm{PRESS2}_{i,t}$ is a dummy variable taking the value 1 if the number of news stories covering the CEO's name and firm *i* in year *t*-1 and year *t* is higher than the average for those in the same industry, zero otherwise.

$\mathrm{PRESS3}_{i,t}$ is a dummy variable taking the value 1 if the number of news stories covering the CEO's name and firm *i* in years *t*-2, *t*-1 and *t* are higher than the average for those in the same industry, zero otherwise.