Accrual and Real-based Earnings Management by UK Acquirers:

Evidence from Pre- and Post-Higgs Periods

Abstract

Purpose: This study investigates the occurrence of pre-merger earnings management for a sample of 197 stock- and cash-financed UK acquirers between 1990 and 2009. We also examine the earnings management behavior around the change in the Corporate Governance Code in 2003 based on the Higgs recommendations.

Methodology: Mean and median accrual and real-based manipulation are examined in the period before the announcement of a merger and acquisition. These are compared across stock and cash acquirers as well as before and after the implementation of the Higgs recommendations. We also run logistic regressions to examine accrual and real-based manipulation across stock and cash acquirers after controlling for variables that may impact the acquisition type.

Findings: We find some evidence of upward pre-merger accrual-based earnings management by stock-financed acquirers, which is in line with the findings of Botsari and Meeks (2008). Furthermore, we do not find significant changes in the post-Higgs period which indicates that the recommendations put forth by Higgs may not have been successful in mitigating earnings management. Our evidence also shows that cash bidders engage in pre-merger real earnings manipulation through lower discretionary expenses, possibly to enhance cash availability for the bid.

Practical implications: The findings in this study confirm earnings management exists around mergers and acquisitions and provide some evidence that the recommendations set out in the Higgs Report do not appear to have mitigated earnings management activities. This is of interest to regulators as well as investors and academicians.

Originality: This provides the first analysis in the UK examining the use of real-based earnings management activities by UK acquirers. It also extends prior research around corporate governance changes that occurred in the UK.

1. Introduction

Earnings management has been extensively examined through a stream of research that considers firms involved in specific corporate events (such as seasoned equity offerings, initial public offerings and management buyouts). This study extends prior results on earnings management in mergers and acquisitions (hereafter M&As) that engage in either cash or stock bids; and examines the prevalence of accrual and real-based earnings management in this context. Furthermore, we examine whether regulatory changes in the UK following the Higgs (2003) report have an impact on earnings management in this context.

Though prior research has examined accrual-based manipulation in the M&A context in the US (such as Erickson and Wang, 1999; Louis, 2004) in the UK (Botsari and Meeks, 2008), and in the Asia-pacific region (Ardekani *et al.*, 2012; Higgins, 2013; Jeong and Bae, 2013), only limited studies have extended its scope to examine whether acquiring firms engage in the manipulation of real activities (e.g. Zhang, 2015). Therefore, a comprehensive study that considers both accrual and real-based earnings management practices is needed to contribute to earnings management research in the UK M&A context.

Furthermore, fundamental changes to governance codes around the world have occurred over the past few years. For example, the enactment of the Sarbanes-Oxley Act in the US; the UK Corporate Governance Code in the UK based on the recommendations set out in the Higgs Report (2003), among others; and the governance reforms in Australia, through the 'Corporate Governance Principles and Recommendations' (ASX, 2003, 2007, and

2014). However, the effectiveness of those changes has not been empirically tested in the M&A setting. The crucial role of the Higgs Report (2003) in improving the Corporate Governance Code in the UK provides the motivation to investigate the prevalence of both accrual and real-based earnings management activities in the period prior to and following the issuance of this report. Support for this analysis is driven by research that indicates the impact of governance characteristics and institutional settings on earnings management behavior (e.g. Koh, 2003; Reverte, 2008; Epps and Ismail, 2009; Kent *et al*., 2010; Bhuiyan *et al*., 2013) as well as recent contributions to the UK literature that document the important effect of some corporate governance mechanisms raised by the Higgs Report (2003) in reducing earnings management activities (Iqbal and Strong, 2010; Habbash *et al.*, 2013a; 2013b).

The findings of the current study show some evidence of income-increasing pre-merger accrual-based earnings management by stock-financed acquirers in the full sample of years 1990-2009. However, there does not appear to be any changes across periods before and after the enactment of the Higgs recommendations. Furthermore, there is no evidence of manipulation by stock bidders using real activities either before or after the enactment of the Higgs recommendations, which indicate that M&As may not have shifted from accrual to real manipulation as is the case in different settings in the US.

On the other hand, cash bidders engage in pre-merger real earnings manipulation through mainly lower discretionary expenses, possibly to enhance cash availability for the bid.

When comparing stock and cash bidders, we find that stock bidders engage in income-increasing accrual manipulation more than cash bidders but mostly in the pre-Higgs period.

This study contributes to the literature in two ways. Firstly, we provide the first analysis of the use of real-based earnings management by UK acquirers following the US empirical methodology (Roychowdhury, 2006; Cohen and Zarowin, 2010; Zang, 2012). Furthermore, we hypothesize and find different results for M&As financed by cash as well as stock. Secondly, this study conducts the first analysis of the effect of the Higgs Report in the M&A setting, by comparing the magnitude of pre-merger accrual and real-based earnings management activities in pre- and post-Higgs periods.

The remainder of the paper is organized as follows. Section 2 reviews the prior studies in the M&A setting as well as those related to accrual and real-based earnings management especially in this setting. Building on the theoretical and empirical support of the literature, several hypotheses are developed. Section 3 discusses the empirical methodology including the sample selection and earnings management measures. Section 4 presents and discusses the empirical results. The last section concludes the paper.

2. Related literature and hypotheses development

Historically, M&As in the UK have been prevalent and have tended to occur in cycles (Resende, 1999, 2008; Kastrinaki and Stoneman, 2013). Kastrinaki and Stoneman (2013) find evidence of long regular cycles in aggregate merger activities over the period 1969-2005 with each cycle lasting 6 years. They show that these cycles of M&A activities are caused by economic factors such as fluctuations in stock prices, interest rates and GDP growth (Kastrinaki and Stoneman, 2013). In essence, M&As are carried out by companies to achieve certain strategic and financial objectives that include: market position improvement, geographic expansion, diversification and/or technological enhancement (Sudarsanam, 1995; Thompson *et al.*, 2004). Other motivations include disciplinary as well as undervaluation reasons (Raj and Forsyth, 2004).

Studies on M&As in the UK tend to examine the effectiveness and the impact of these activities in certain sectors such as in hospitals (e.g. Haigh, 2000; Cereste et al., 2003; Gaynor et al., 2012) and in banks (e.g. Barnes, 1985; Haynes and Thompson, 1999; Saunders and Wilson, 1999; Piskula, 2011). However, results from these studies cannot be easily generalized to other sectors.

Studies in the UK that cover economy-wide M&A activities tend to focus on post-merger accounting returns (profitability) or short- and long-term effects on shareholder wealth of the acquirer or the target firm with mixed results. For example, some studies find that the profitability of UK acquiring firms consistently declines in post-merger years (Meeks, 1977; Dickerson *et al.*, 1997; Kumar, 1984). Other studies find post-merger increase in profitability in certain instances (Chatterjee and Meeks, 1996; Guest *et al.*, 2010).

Furthermore, some studies find a negative impact on share returns for the acquirer firm (Barnes, 1984; Franks and Harris, 1989; Conn *et al.*, 2005) whereas others find a positive impact (Hodgkinson and Partington, 2008).

The mode of payment of the acquisitions is also an important consideration. Previous US and UK literature (e.g. Shleifer and Vishny, 2003; Sudarsanam and Mahate, 2003; Dong *et al.*, 2006; Akbulut, 2013) document negative announcement returns earned by acquiring firms who use stock as a mode of payment and these equity-financed bids substantially underperform cash-financed ones. This is consistent with potential overvaluation of acquirers' stock which is not fully corrected on the announcement date, but rather destroys shareholder value both in the short and long run.

However, few studies have focused on examining accounting irregularities in acquirers prior to an M&A announcement which can potentially explain mixed evidence of shareholder returns around M&As. An acquirer's motivation to manage earnings depends on the use of equity as a mode of payment because the market value of a share is affected by earnings management. The target's shareholders are concerned with the fair value of the acquirer's share, only if they have an ownership interest in the combined firm in exchange for their old shares. The following sections present current literature in this area conducted in other countries and propose the hypotheses for the current study.

2.1 Accrual-based earnings management in M&As

Several studies have examined the occurrence of earnings management around major events in corporate finance. These events include seasoned equity offerings (e.g. Rangan, 1998; Teoh *et al*., 1998b; Shivakumar, 2000; Ching *et al*., 2006; Iqbal *et al*., 2009;

Bardos and Zaiats, 2012; Dionysiou, 2015), initial public offerings (e.g., Teoh *et al.*, 1998a; Teoh *et al.*, 1998c; Teoh and Wong, 2002; Chang *et al.*, 2010; Liu *et al.*, 2014; Miloud, 2014), and management buyouts (e.g. DeAngelo, 1986; Perry and Williams, 1994).

In the M&A setting, it is expected that acquirers who engage in stock swaps have a particular incentive to manage earnings upward before making a bid, in order to look more attractive to the target's shareholders and to improve their chance of successfully completing the bid (Erikson and Wang, 1999; Botsari and Meeks, 2008). The effect of earnings management on M&As was first empirically investigated by Erickson and Wang (1999). Using a sample of 55 US acquirers completing stock-for-stock mergers from 1985 till 1990, they find that stock-financed bidders manage earnings upward in the quarter immediately preceding the announcement date of the stock swap acquisition. They also report that cash acquirers do not reveal significant levels of abnormal accruals during the pre-merger periods. Louis (2004) also finds that discretionary current accruals are positive and statistically significant for acquiring firms who engage in stock swaps especially in the quarter immediately preceding the deal's announcement. Using a sample of 609 mergers of publicly traded targets and 898 mergers of privately held targets between 1990 and 1998, Baik *et al*. (2007) provide additional evidence that US acquirers are more likely to manage accrual-based earnings upward when they use stock to acquire a privately held target.They argue that bidders have greater incentives to manage earnings prior to their acquisition if the respective target was privately held in order to compensate for the relatively higher level of information asymmetry.

Consistent with previous US studies, Botsari and Meeks (2008) find significant evidence of pre-merger earnings management for bidders who engage in stock-financed bids in the UK. The study covers a sample of 42 UK publicly traded acquiring firms, over the period 1997-2001, that used their shares in the deal's payment structure offered to the respective target firms. They document strong evidence suggesting that acquiring firms engage in income-increasing accrual manipulation in the year immediately preceding the bid announcement.

In other regions, mixed results are found. For example, Koumanakos *et al.* (2005) examine a sample of 42 acquiring firms that successfully completed their bids in Greece during the period 2001-2003 and find positive, albeit weak, evidence of accounting earnings manipulation in the year prior to the announcement and the completion of the bid. Ardekani et al. (2012) find, in a sample of Malaysian firms during 2004-2010, evidence of upward earnings manipulation for stock acquirers but not for cash acquirers. Higgins (2013), using a sample of 133 Japanese stock-for-stock acquirers during 1990–2004, documents evidence that acquiring firms manage earnings upward in the year preceding the bid announcement. Limited evidence also exists, in Australian M&As during the period 1986-1991, that the target company engages in earnings manipulation following the bid announcement (Eddey and Taylor, 1999). Ben-Amar and Missionier-Piera (2008) on the other hand, find that managers of friendly takeover targets in Switzerland manage earnings downwards in the year prior to the event. Jeong and Bae (2013), in the Korean context, also find evidence of acquiring firms managing pre-merger earnings downwards, when the stock-for-stock merger is between firms in the same business group.

Given the motivation of the acquirers to manage earnings upward prior to M&A deals and the supported empirical literature, we begin by replicating prior results in our sample and examine the following hypothesis:

Hypothesis 1a: Successful stock bidders engage in positive accrual-based earnings management in the accounting year prior to a bid announcement.

Several studies (such as Travlos, 1987; Loughran and Vijh, 1997; Linn and Switzer, 2001; Sudarsanam and Mahate, 2003; Moeller *et al.*, 2004; Dong *et al*., 2005; and others) find that acquirers experience negative stock returns around the announcement of stock-financed acquisitions but not cash-financed acquisitions. This could indicate that the announcement of cash acquisitions reveal more favourable information than the announcement of stock acquisitions and hence there is less incentives for cash bidders than stock ones to manage earnings. Also, from the accounting perspective of window dressing, it could be argued that acquirers who engage in stock swaps have more incentives than cash acquirers to manage their earnings upward before the merger takes place in order to look more attractive to the target's shareholders and receive their approval. In this regard, the motivation of cash acquirers to manage earnings is limited because it will be a costly process that carries no economic return. Moreover, acquirer's shareholders retain the same level of control over their company in using cash versus stock as a mode of payment. Hence, there is no dilution of management control associated with cash acquisitions and any attempt to manage accrual and/or real-based earnings should have no effect on the purchase deal. Therefore, we expect the following

regarding earnings management practices in stock bidders when compared to cash bidders.

Hypothesis 1b: Successful stock bidders engage in more positive accrual-based earnings management in the accounting year prior to a bid announcement compared to cash bidders.

2.2 Real-based earnings management

Although most of the research in earnings management has focused on accrual based earnings management, recent literature investigates the use of real activities in manipulating earnings. A US-based survey of top executives finds that managers prefer real earnings management activities to manipulation of accruals (Graham *et al.*, 2005). They provide strong evidence that managers engage in real economic actions, which include price discounts to temporarily increase sales, excessive inventory production to lower the cost of goods sold, and aggressive reduction in discretionary expenditures such as research and development (R&D) expenses to improve profit margins (Graham *et al.*, 2005). Prior research examine one particular real account manipulation method such as the reduction of R&D expenditures (Baber *et al.* 1991; Bushee 1998); while others examine all three manipulation methods around a threshold such as zero earnings (Roychowdhury 2006).

Cohen and Zarowin (2010) examine both accrual and real-based earnings management behavior around seasoned equity offerings (SEOs) for a sample of 1,511 completed US offers from 1987 to 2006. They find that US firms engage in income-increasing accrual manipulation, as well as real-based earnings management activities around SEOs, and

that managers trade-off these two activities. Ibrahim *et al*. (2011) examine a sample of 1,871 SEO firms between 1990 and 2004 and find that SEO firms engage in income-increasing accrual and real account manipulation in the year prior to the offering. Zang (2012) investigates whether managers make accrual and real earnings manipulation simultaneously or sequentially. The author provides empirical evidence that accrual and real earnings management practices are implemented sequentially, with real earnings manipulation decisions preceding earnings management via accruals (Zang, 2012). Dionysiou (2015) examines both accrual and real accounts manipulation in a sample of UK pure placements (where pre-emptive rights of existing shareholders in secondary equity offerings are waived) and does not find evidence of either. In the M&A setting, only limited research has examined the use of real manipulation around mergers. For example, Zhang (2015) finds, in a sample of Chinese acquisitions during the period 2008-2010, that acquirers using stock-for-stock exchanges exhibit significant negative abnormal cash flows and discretionary expenses prior to the merger, which provide evidence of upward real earnings manipulation.

Building on the empirical evidence of the existence of real earnings management activities to manage earnings, the following hypotheses are proposed:

Hypothesis 2a: Successful stock bidders engage in positive real-based earnings management in the accounting year prior to a bid announcement.

Hypothesis 2b: Successful stock bidders engage in more positive real-based earnings management in the accounting year prior to a bid announcement compared to cash bidders.

2.3 Higgs Report (2003) and earnings management

Given that accounting research should be closely tied to practice, prior research finds that a significant area of research impact in different settings is regulatory policy (Benson *et al.*, 2014). Therefore, it is important to examine how regulation might impact the behavior of firms around M&As. In the context of earnings manipulation, a growing consideration in the literature has been given to the important role of different corporate governance mechanisms and practices in monitoring managers' discretion and in limiting their abilities to manipulate earnings (Dechow *et al.*, 1996; Peasnell *et al.*, 2000a, 2000b; Xie *et al.*, 2003; Davidson *et al.*, 2005; Peasnell *et al.*, 2005; Habbash *et al.*, 2013a). For example, in the US, regulatory changes through the Sarbanes-Oxley Act in 2002 which strengthened governance mechanisms have led to a reduction in accrual earnings management in different contexts (Cohen *et al.*, 2008; Li *et al.*, 2008; Chen and Huang, 2013). Ewert and Wagenhofer (2005) show analytically that earnings quality increases with tighter standards. However, managers increase costly real-based manipulation.

Recent governance reforms in Australia, through the 'Corporate Governance Principles and Recommendations' (ASX, 2003, 2007, and 2009) targeted areas that would improve monitoring such as establishing a corporate governance committee. Evidence points to those reforms being associated with reduced earnings management (Liu, 2012). Moreover, based on 70 New Zealand listed companies over the period of 2000-2007, Bhuiyam *et al*. (2013) provide evidence that better compliance with corporate governance mechanisms is related to lower managerial discretionary accruals. Other research examines how particular governance attributes impact earnings management. For example, Davidson et al. (2005) find, in a sample of Australian firms in 2000, that a

majority of non-executive directors on the board and on the audit committee are associated with a lower likelihood of earnings management. Moreover, through an Australian study of listed companies, Baxter and Cotter (2009) find that audit committees are associated with lower intentional earnings management activities. Chen *et al*. (2007) find that corporate governance characteristics (independence of supervisors, financial expertise of independent directors, and voluntary formation of independent directorships) reduce the likelihood of earnings management for companies listed in Taiwan. This relation was stronger after the enactment of the Corporate Governance Best-Practice Principles (CGBPP) in Taiwan. Similarly, Kasipillai and Mahenthiran (2013), through a sample of 221 Malaysian public listed companies (PLCs) from 2005 to 2008, find that corporate governance mechanisms (ownership structure and board structure) reduce earnings management activities.

Recent UK studies by Iqbal and Strong (2010) and Habbash *et al.* (2013a; 2013b) shed light on the crucial role and impact of the recent corporate governance recommendations and reforms on enhancing the reporting quality in the UK in general and constraining earnings management activities in particular. The Higgs Report on the Corporate Governance Code (2003) stresses the importance of corporate governance mechanisms in enhancing the quality of accounting information. In addition to its recommendations that at least half of the board members should be independent non-executive directors, the Higgs Report (2003) stresses that one of the responsibilities of non-executive directors is to assure themselves about the integrity of financial information through enforcing financial control mechanisms and systems of risk management. In this regards, recent UK studies support these recommendations by stressing the important role of non-executive

directors in reducing earnings management activities (Iqbal and Strong, 2010; Habbash *et al.*, 2013a).

To the extent that the Higgs Report (2003) has had a major role in strengthening the Corporate Governance Code in UK, it is of interest to investigate the prevalence of both accrual and real-based earnings management activities in the period leading to and following the implementation of Higgs recommendations. In this regard, the primary objective in examining changes in firms' earnings management practices is to investigate whether the passage of the report resulted in constraining such manipulation. We formulate the following hypotheses:

Hypothesis 3a: The magnitude of positive accrual-based earnings management by successful stock bidders is lower in the post-Higgs period than in the pre-Higgs one.

Hypothesis 3b: The magnitude of positive accrual-based earnings management by successful stock bidders compared to cash bidders is lower in the post-Higgs period than in the pre-Higgs one.

Cohen *et al*. (2008) find that the period prior to the passage of SOX in 2002 was characterised by higher levels of accrual-based earnings management activities and lower levels of real-based activities. On the other hand, they document that following the implementation of SOX, accrual-based earnings management practices decreased significantly while real-based manipulation increased significantly. Cohen *et al.* (2008) and Graham *et al.* (2005) attribute this shift in earnings manipulation between accrual and real-based activities before and after the SOX Act to the crucial role of auditors or

regulators in scrutinising accrual manipulations rather than real ones after the passage of SOX Act.

In line with this, Ibrahim *et al*. (2011) find that the enactment of SOX has an impact in reducing accrual-based earnings management activities in the SEO setting. They stress the substitution effect between accrual- and real-based manipulations. Zang (2012) provides empirical evidence confirming that managers use these two forms of manipulation as substitutes. Based on this US evidence, we examine whether the level of real earnings management activities increased after Higgs and whether firms switched from accrual earnings management to real-based manipulation. The following hypotheses are formulated:

Hypothesis 4a: The magnitude of positive real-based earnings management by successful stock bidders is higher in the post-Higgs period than in the pre-Higgs one.

Hypothesis 4b: The magnitude of positive real-based earnings management by successful stock bidders compared to cash bidders is higher in the post-Higgs period than in the pre-Higgs one.

3. Sample and methodology

3.1 Data and sample selection

The sample in this study includes M&As announced by UK companies in the twenty year period from 1 January, 1990 till 31 December, 2009. The period is particularly interesting because in the 1990s the UK experienced the fourth M&A wave. Furthermore, during this period there were major changes in the corporate governance arrangements starting with

the enforcement of Cadbury Report in 1992 and the revision of the UK Corporate Governance Code introduced in July 2003 following the recommendations raised in the Higgs and Smith reports.

To be included in the final sample, each deal has to meet the following criteria:

1. The deal was successfully completed between UK acquirers and domestic targets.

2. Acquirers and targets must be publicly listed companies and traded on the London Stock Exchange (LSE) for two reasons: The first reason is that both acquirers and targets are subject to same issuances of laws and regulations such as the recommendations raised by Higgs Report (2003). The second reason is to minimize the differences in the level of information asymmetry between the bidder and the target.

3. The deal is financed either by using pure cash or by offering shares to the target firm.[1]

4. Acquirers and targets belong to an industry other than the banking and financial industry since they are subject to specific accounting requirements which may differ substantially from other sectors.

5. The acquirer has the necessary financial data on Datastream to estimate the annual proxies for both accrual and real-based earnings management in the period prior to the announcement deal.

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[1] We include only acquisitions that use one financing method for clearer results. However, in un-tabulated results, we also examine acquisitions financed by a combination of cash and stock and find no significant manipulation in this sample.

To account for confounding multiple transactions, we require that acquisitions by the same firm not be in adjacent fiscal periods. We first examine all acquisitions and determine the fiscal period in which they were announced. In order to limit mis-specification of the accrual and real manipulation measures in the year prior to the announcement, if an acquirer has two acquisitions in adjacent years, we keep only the first acquisition.[2]

In addition to exclusion of observations due to unavailable data, a few observations are deleted to mitigate the effects of outliers. The mean plus/minus 3 Standard deviation rule is used to check the distribution of variables in the study and we exclude extreme values.

The final sample consists of 197 firm observations of acquirers that meet the sampling criteria and have available data. Sample data for the M&As were drawn from two main sources, namely *Thomson One Banker* and *Datastream*. The detailed sample selection procedure is illustrated in Table 1. In the final sample there are 23 firms with multiple acquisitions that span the sample period. Out of these, 21 firms have two acquisition deals that are not in adjacent years. The remaining 2 acquirers have three acquisition deals not in adjacent years.

((Table1))

Table 2 reports the distribution of the final sample comprising of 197 bids. Panel A presents the distribution of the overall sample of acquirers by year for the full sample and by mode of payment. The sample distribution by year indicates that merger activities peaked at the end of the 1990s. From the entire sample, 75 bids are stock offers and the

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[2] Results when these multiple acquisitions are included in the final sample are qualitatively the same.

remaining are cash ones. Panel B of this table demonstrates how the sample is distributed across a total range of 12 industry sectors. These sectors are classified according to the Fama and French 12 industry classification using the 2-digit SIC codes. Sectors that are more representative than others in the sample are: manufacturing with 23 acquirers (11.68 percent), healthcare with 19 acquirers (9.64 percent), business equipment with 17 acquirers (8.63 percent) and wholesale and retail with 16 acquirers (8.12 percent). A comparison of cash and stock bids reveals differences across the healthcare industry (16 percent of stock bids but only 5.74 percent of cash bids) as well as the energy sector (4 percent of stock bids but only 0.82 percent of cash bids).

((Table 2))

There are 131 bids that took place before the enactment of the Higgs Report (2003) (classified as years 1990-2002) in which 42 of them are stock offers and the remaining are cash ones. The period after the issuance of this report reveals that out of 66 bids, 33 are stock offers and the rest are cash ones.

3.2 Accrual-based earnings management measures

Accrual-based earnings management is measured using both the discretionary current accruals and the discretionary total accruals based on the cross-sectional version of the modified Jones model (Jones, 1991; Dechow *et al.*, 1995) with modifications suggested by Kothari *et al.* (2005). We use current accruals as Botsari and Meeks (2008) and Louis (2004) note that in M&As and for valuing bidders and targets, investment bankers rely heavily on earnings before interest, taxes, depreciation, and amortisation (EBITDA). In this case, the bidder has greater incentives to manage current accruals. We also use total

accruals for robustness as this may indicate overinvestment activities and/or agency problems of the bidders; the difference between total accruals and current accruals comes from depreciation and amortization expense which is related to fixed assets and company size (Dionysiou, 2015). We use the cash flow approach in measuring current and total accruals given that the balance sheet approach can distort accruals especially around non-articulation events such as M&As (Hribar & Collins, 2001).

We measure earnings management in the year preceding the takeover as identified by the announcement date of the deal, as provided in the *Thomson One Banker* database, assuming that acquirers manage earnings before the announcement of a bid (DeFond and Park, 2001; Dechow *et al.*, 2012; Higgins, 2013). The acquisition year (year t) and pre-acquisition year (year t-1) are determined similar to Iqbal et al. (2009). As an example, if a firm has a December 31 year-end, we assume that accounting information for the financial year 2006 is available by March 31st, 2007. If the firm announces an acquisition between April 1st 2007 and March 31st, 2008, we use accounting information for 2006 as the data for the pre-acquisition year.

Discretionary accruals are estimated in a two-step process. The first step involves the estimation of non-discretionary accruals based on the following cash-flow approach of the current accrual model:

$$\frac{CAC_{ij,t}}{TA_{ij,t-1}} = a_0\left(\frac{1}{TA_{ij,t-1}}\right) + a_1\left(\frac{\Delta REV_{ij,t}}{TA_{ij,t-1}}\right) + a_2\left(ROA_{ij,t}\right) + \varepsilon_{ij,t}$$

Where:

$CAC_{ij,t}$ is the current accruals for a firm i in industry group j for year t, measured as net income before extraordinary items less operating cash flow less depreciation and amortization;

$\Delta REV_{ij,t}$ is the change in revenues for firm i in industry group j for year t;

$TA_{ij,t-1}$ is total assets for firm i in industry group j for year t-1;

$ROA_{ij,t}$ is return on assets for firm i in industry group j for year t;

$\varepsilon_{ij,t}$ is the residual term for firm i in industry group j for year t.

All variables in the above regression model, other than $ROA_{ij,t}$, are scaled by lagged total assets ($TA_{ij,t-1}$) in order to reduce heteroskedasticity. The estimation of coefficients â$_0$, â$_1$, and â$_2$ is done using all data from Datastream for all available firms and not only the sample M&A firms. The regressions are based on industry and year combination with industry classification based on the Fama and French 12 industry classification (FF12). The full set of observations in Datastream is used to ensure unbiased estimates for the above coefficients.

The estimates of a$_0$, a$_1$, and a$_2$ are used to calculate normal or non-discretionary current accruals ($NCAC_{ij,t}$). [3] Abnormal current accruals ($A\_CA_{ij,t}$) are then estimated as the difference between current accruals and normal or non-discretionary accruals.

The following cross-sectional regression model is used to estimate the cash flow-based total discretionary accrual for each industry and year combination.

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[3] Change in accounts receivable is subtracted from change in revenue in the estimation of normal accruals to take into account any possible discretion arising from credit sales (DeFond and Jiambalvo, 1994).

$$\frac{TAC_{ij,t}}{TA_{ij,t-1}} = a_0 \left(\frac{1}{TA_{ij,t-1}} \right) + a_1 \left(\frac{\Delta REV_{ij,t}}{TA_{ij,t-1}} \right) + a_2 \left(\frac{PPE_{ij,t}}{TA_{ij,t-1}} \right) + a_3 \left(ROA_{ij,t} \right) + \varepsilon_{ij,t}$$

Where:

TAC_{ijt} is total accruals for firm i in industry group j for year t, measured as net income before extraordinary items less operating cash flow;

$PPE_{ij,t}$ is the gross property plant and equipment for firm i in industry group j for year t;

All other variables are as previously defined.

We use OLS regressions to estimate the above coefficients by each industry group and year to calculate normal or non-discretionary total accruals ($NTAC_{ij,t}$). Then, the abnormal total accruals ($A\_TA_{ij,t}$) represent the difference between the total accruals and the non-discretionary or normal accruals.

3.3 Real-based earning management measures

According to prior US studies by Roychowdhury (2006), Cohen and Zarowin (2010), Ibrahim *et al.* (2011), and Zang (2012), real earnings management activities can be undertaken by the following three methods:

1. Sales manipulation by accelerating the timing of sales through increasing price discounts or offering more lenient credit terms that will in turn temporarily increase sales levels.

2. Discretionary expenditures manipulation by reducing advertising expenses, research and development (R&D) expenses and selling, general, and administrative (SG&A)

expenses. The reduction in these discretionary expenditures will boost current period earnings, especially if they do not generate immediate revenues and income.

3. Production manipulation by overproducing goods to meet expected demand and boost earnings.

Based on these manipulation methods, three proxies are derived to measure real earnings management activities: abnormal cash from operations (*A_CFO*), abnormal discretionary expenses (*A_DISX*) and abnormal production costs (*A_PROD*). To estimate the abnormal values of these proxies, the normal levels of cash from operations, discretionary expenses, and production costs are calculated by implementing the models developed by Dechow *et al.* (1998) and as followed in Roychowdhury (2006). Following Dechow *et al.* (1998), normal cash flow from operations are expressed as follows:

$$\frac{CFO_{ij,t}}{TA_{ij,t-1}} = a_0 \frac{1}{TA_{ij,t-1}} + a_1 \frac{REV_{ij,t}}{TA_{ij,t-1}} + a_2 \frac{\Delta REV_{ij,t}}{TA_{ij,t-1}} + \varepsilon_{ij,t}$$

Where:

$CFO_{ij,t}$ is operating cash flow for firm *i* in industry group *j* for year *t*;

All other variables are as previously defined.

The estimation of coefficients a_0, a_1, and a_2, for each industry group is done in each year by following OLS regressions using the full data available in Datastream and these are used to calculate the normal level of CFO. Abnormal CFO (*A_CFO*) is the difference between actual CFO and the normal level of CFO.

Production costs are defined as the sum of cost of goods sold (COGS) and change in inventory during the year. Following Dechow *et al.* (1998), we estimate the normal level of production costs through the following industry-year regressions:

$$\frac{PROD_{ij,t}}{TA_{ij,t-1}} = a_0 \frac{1}{TA_{ij,t-1}} + a_1 \frac{REV_{ij,t}}{TA_{ij,t-1}} + â_2 \frac{\Delta REV_{ij,t}}{TA_{ij,t-1}} + a_3 \frac{\Delta REV_{ij,t-1}}{TA_{ij,t-1}} + \varepsilon_{ij,t}$$

Where:

$PROD_{i,j,t}$ is the sum of the cost of goods sold and inventory change for firm *i* in industry *j* and year *t*;

All other variables are as previously defined.

Abnormal production costs (*A_PROD*) are computed as the difference between the actual value of the production costs and its normal level predicted from the estimated coefficients of the regression model.

Similarly, following Roychowdhury (2006), normal discretionary expenses are measured through the following regression:

$$\frac{DISX_{ij,t}}{TA_{ij,t-1}} = a_0 \frac{1}{TA_{ij,t-1}} + a_1 \frac{REV_{ij,t-1}}{TA_{ij,t-1}} + \varepsilon_{ij,t}$$

Where:

$DISX_{ij,t}$ is discretionary expenses for firm *i* in industry group *j* for year *t;*

All other variables are as previously defined.

Abnormal discretionary expenses (*A_DISX*) represent the difference between the discretionary expenses and their value at its normal level as predicted from the estimated

coefficients of the regression model. Discretionary expenses are defined as the sum of research and development (R&D) expenses and selling, general & administrative (SG&A) expenses. In calculating discretionary expenses, if SG&A is not missing but the R&D value is missing, then R&D is set to zero.

For a given level of sales an upward manipulation in real-based earnings is detected, if firms have: unusually low cash flow from operations (i.e. negative abnormal CFO), and/or unusually low discretionary expenditures (i.e. negative abnormal discretionary expenses), and/or unusually high production costs (i.e. positive abnormal production costs).

Table 3 presents correlation coefficients between all above accrual and real manipulation measures. As can be seen, *A_CA* and *A_TA* are highly correlated (coefficient = 0.893; significant at the 1% level). The highest correlation between accrual and real-based manipulation measures is between *A_CA* and *A_CFO* (coefficient = -0.521; significant at the 1% level). As can be seen there is a negative correlation between both accrual manipulation measures and *A_CFO* as well as *A_DISX* given that the first has an income-increasing effect while the latter two have an income-decreasing effect. Furthermore, there is a positive correlation between both accrual manipulation measures and *A_PROD* as both indicate income-increasing behavior.

((Table 3))

4. Empirical results

4.1 Accrual-based earnings management prior to merger announcements

Table 4 presents the mean and median values for both current and total accruals in the overall sample and for stock and cash bidders, separately. The mean abnormal working capital accruals of 0.019 and the median estimate of 0.018 in Table 4 are both statistically different from zero for the entire sample. When the sample is divided into stock and cash bids, different results between these two groups are observed. The mean and median abnormal current accrual for bidders engaging in stock swaps are 0.031 (significant at the 10% level) and 0.039 (significant at the 1% level), respectively. These results support the first proposed hypothesis (1a) in this study and are consistent with Louis (2004) and Botsari and Meeks (2008). For instance, Botsari and Meeks (2008) find that the median discretionary accruals is 0.03 and statistically significant at the 5% level. Under the total accrual measure, discretionary accruals for stock bids are again positive, but are not statistically significant, except for the median.

When comparing stock and cash bids, we find that the median differences (using the Wilcoxon Rank Sum test) for current and total abnormal accruals are 0.039 and 0.031 (both significant at the 5% level) respectively. This indicates that the stock-financed acquirers have significantly higher abnormal accruals than the cash-financed acquirers, in support of hypothesis 1b. These findings are consistent with those reported in Erickson and Wang (1999), Louis (2004), and Botsari and Meeks (2008) who find that stock bidders have significantly higher abnormal accruals than cash ones.

((Table 4))

4.2 Real-based earnings management prior to merger announcements

Results in Table 5 provide the mean and median estimates of the three measures: *A_CFO*, *A_DISX*, and *A_PROD* in the year preceding the announcement date for the entire sample and for cash and stock bids, separately. As discussed in the previous section, a negative *A_CFO* and *A_DISX*, and a positive *A_PROD* all indicate positive earnings manipulation. The mean and median values for the three real-based earnings management proxies for stock acquirers are not significant (except for *A_CFO* which has a significant positive median) and thus do not support hypothesis 2a. Therefore, the findings do not support the view that stock bidders manage, in addition to accrual-based earnings, real-based ones. One reason for this could be that real activities manipulation is more costly than accrual manipulation and therefore would be less preferred by managers (Zang, 2012; Abernathy *et al.*, 2014).

The median values of *A_CFO* for the whole sample and for cash-paying acquirers are positive and statistically significant at the 1% level, which is not consistent with income-increasing real account manipulation. However, the negative mean and median estimates for the abnormal discretionary expenses of -0.091 and -0.106 respectively (both significant at the 1% level) for cash bidders indicate that they reduce these expenses substantially. This significant reduction in discretionary expenditures increases cash flows from operations and hence may lead to positive estimates of *A_CFO*.

((Table 5))

When comparing stock bidders to cash bidders, we find that stock acquirers have significantly lower income-increasing manipulation through *A_DISX* than the cash acquirers for both the mean and median (cash acquirers have more negative abnormal discretionary expenses) and this is statistically significant at the 1% level. The statistically significant mean difference for *A_PROD* of -0.051 between stock and cash bids also indicate that stock bidders engage less in real-based earnings management activities through overproduction than cash bidders (cash acquirers have more positive abnormal production). Therefore, we do not find support for hypothesis 2b.

The lack of support for this hypothesis could be associated with the costs and constraints faced by firms in using real-based earnings management. Lower industry market share, poorer financial condition and higher tax rates are important constraints in managing earnings through real-based activities (Zang, 2012; Abernathy *et al,*. 2014).

4.3 Accrual-based earnings management prior to merger announcements: Pre- versus Post-Higgs

The Higgs Report (2003) plays a major role in improving corporate governance through, among other things, calling for greater representation of outside directors on UK corporate boards. Table 6 presents the acquirers' mean and median current and total abnormal accruals pre- and post-Higgs after separating the sample into stock and cash acquirers. The mean (median) current and total abnormal accruals for stock bidders in the pre-Higgs period show statistically significant positive estimates of 0.022 (0.031) and 0.023 (0.029) respectively. However, the results for the difference in the mean and median figures for abnormal current accruals between pre- and post-Higgs groups are not

statistically significant and do not support hypothesis 3a. Therefore, it does not appear that stock acquirers have reduced accrual manipulation following the enactment of the Higgs recommendations. This could be due to the fact that when managers find that certain earnings management strategies (real-based ones) are more costly and constrained than the others, they will concentrate on other earnings management strategies (such as accrual-based ones) with less constraints and costs (Zang, 2012). This is feasible, especially given the low litigation risk in the UK compared to other countries, such as the US (Seetharaman *et al.*, 2002). Therefore, it appears that the recommendations set out in the Higgs Report have not mitigated accrual earnings management.

((Table 6))

The analysis of the cash acquirers subsample for the current and total abnormal accrual fails to yield any statistical significant results either for the pre-Higgs or for the post-Higgs sample.

In comparing the difference between stock and cash bidders in the pre-Higgs and post-Higgs periods, we find that stock bidders have statistically significant higher income-increasing accruals only in the pre-Higgs period. Specifically, the median difference for *A_CA (A_TA)* is 0.033 (0.036), significant at the 10% (5%) level. This partially supports hypothesis 3b.

To sum up, this analysis indicates that the overall level of accrual-based earnings management activities for stock acquirers is not significantly lower in the post-Higgs era.

These findings are not consistent with findings in other contexts such as Cohen *et al.* (2008) and Ibrahim *et al.* (2011) who find a decrease in the accrual-based earnings manipulation after the passage of SOX in 2002 and with Chen *et al.* (2007) who also find a greater reduction in earnings management after the enactment of the Corporate Governance Best-Practice Principles (CGBPP) in Taiwan. However, when comparing stock and cash bidders, there is evidence of higher manipulation using accruals before the enactment of the Higgs recommendations but not after.

4.4 Real-based earnings management prior to merger announcements: Pre- versus Post-Higgs

The effect of the enactment of the Higgs Report (2003) on real earnings management proxies is also tested to examine if there is any change in earnings manipulation between the two periods. As shown in Table 7, the mean and median *A_CFO*, *A_DISX*, and *A_PROD* for stock bidders in the pre- and post-Higgs periods do not reveal significant figures. Moreover, the mean and median differences between the two periods do not exhibit statistically significant results; therefore, there is no support for hypothesis 4a.

((Table 7))

Results in Table 7 also provide some evidence of a difference in income-increasing manipulation through real accounts for cash bidders between pre- and post-Higgs periods. The mean (median) estimates of *A_DISX* for cash bidders are -0.165 (-0.142) in the post-Higgs period as compared to -0.061 (-0.086) in the pre-Higgs period.

When comparing stock vs. cash bidders in both periods, we find significant differences in *A_DISX* both before and after the enactment of Higgs [mean (median) differences are 0.114 (0.059) before Higgs and 0.212 (0.156) after Higgs, significant at 10% level or below]. Therefore, there is no support for hypothesis 4b.

Therefore, unlike US evidence of a shift to real earnings manipulation after the passage of SOX 2002, UK cash bidders engage in real-based earnings management activities through reducing discretionary expenses before the enactment of Higgs Report and enhance them in the post-Higgs era. This insignificant evidence of substituting accrual-based with real-based earnings management activities could be due to the higher costs and constraints for real-based manipulation as compared to engaging in accrual-based activities (Zang, 2012).

4.5 Multivariate Analysis

In order to further examine the use of accrual and real manipulation in acquisitions that are financed by stock compared to those financed by cash, we provide multivariate results while controlling for variables related to the acquirer itself as well as variables related to the bid. The following logistic regressions are used:[4]

$$STK = a_0 + a_1 A\_CA(A\_TA) + a_2 A\_CFO + a_3 A\_DISX + \alpha_4 A\_PROD + \alpha_5 PREM + \alpha_6 INDR$$
$$+ a_7 SIZE + a_8 LEV + a_9 MTBV + \alpha_{10} OWN + \sum \alpha_j IND + \sum \alpha_t year + \varepsilon$$
$$(1)$$

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[4] Firm and year subscripts are not included for ease of presentation.

$$STK = a_0 + a_1 A\_CA(A\_TA) + a_2 A\_CFO + a_3 A\_DISX + \alpha_4 A\_PROD + \alpha_5 POST - HIGGS +$$
$$\alpha_6 A\_CA(A\_TA)*POST - HIGGS + \alpha_7 A\_CFO*POST - HIGGS + \alpha_8 A\_DISX*POST - HIGGS +$$
$$\alpha_9 A\_PROD*POST - HIGGS + \alpha_{10}PREM + \alpha_{11}INDR + a_{12}SIZE + a_{13}LEV + a_{14}MTBV$$
$$+ \alpha_{15}OWN + \sum \alpha_j IND + \sum \alpha_t year + \varepsilon$$

(2)

Where:

STK is a dummy variable taking the value of 1 if the acquisition was financed by stock and 0 if financed by cash*;*

$POST\_HIGGS$ is a dummy variable taking the value of 1 if the acquisition was in the post-Higgs time period and 0 otherwise;

$PREM$ is the percentage premium paid by the acquirer with respect to the target's share price four weeks prior to the announcement date as provided by Thomson One Banker;

$INDR$ is a dummy variable for industry relatedness of the merging firms which takes the value of 1 if the acquirer and target have the same 2-digit SIC Codes.

$SIZE$ is the size of the acquirer as measured by the log of its total assets, from Datastream;

LEV is leverage as measured by the acquirer's total debt divided by total asset, both from Datastream;

$MTBV$ is the market-to-book value of the acquirer defined as the market value of the common equity divided by the book value of the common equity the year before the merger announcement, both from Datastream;

OWN is the total percentage of shares held by outsiders holding 5% or more of total shares, from company's annual report;

All other variables are as previously defined.

We include all accrual and real manipulation variables in the regression to test the significance of each. Therefore, our coefficients of interest are α_1-α_4 in regression (1). To test for any differences across the periods before and after Higgs, we add interaction variables in regression (2) and therefore our coefficients of interest are α_1-α_4 as well as α_6-α_9. We do not include both *A_CA* and *A_TA* in the same regression as they are highly correlated and both represent accrual manipulation; but we run regressions using each separately. We include as control variables the four-week premium since prior research shows a significant relationship between the payment method and the payment of premium (Antoniou *et al.*, 2008). We also include the industry-relatedness of the acquirer and target since empirical evidence suggests that there is a difference in the impact of the bid on shareholder wealth for acquirers who engage in related acquisitions as compared to those in unrelated transactions (Matsusaka, 1993; Archbold, 2000; Walker, 2000). We also include the size of the acquirer and the leverage since these variables can affect the performance of the acquirer firm (Dickerson *et al.*, 1997). We include the market-to-book value of the acquirer to control for the growth prospects especially that that the empirical evidence report that value firms (low *MTBV*) experience larger gains than glamour ones (high *MTBV*) (Sudarsanam and Mahate, 2003) and cash acquirers are less overvalued than stock ones (Dong et al., 2006). We also include *OWN*, which controls for governance characteristics. Higher outside ownership of shares may indicate more scrutiny and lower opportunities of manipulation. This variable has been previously used to control for the governance structure in the earnings management context (e.g. Kasipillai and Mahenthiran, 2013). Finally, we include year and industry dummies. The results are presented in table 8.

((Table 8))

Panel A presents results of the regressions using *A_CA* as the accrual manipulation variable. Unlike the univariate results, there is no evidence that stock-financed bids have a higher prevalence of accrual manipulation than cash-financed bids in the full sample (coefficient of *A_CA* is not significant). However, the results in the first column indicate that bids that are financed by cash have significantly less abnormal discretionary expenses (coefficient = 5.961; significant at the 5% level). This finding corroborates the result using mean differences for *A_DISX*. Therefore, cash bidders appear to reduce their discretionary expenses in preparation for an acquisition which would indicate income-increasing manipulation.

The results including the *POST-HIGGS* indicator variable as well as the interaction terms reveals some significant differences between the pre- and post-Higgs periods. Specifically, the coefficient for *A_DISX* and *A_PROD* are both positive and significant (coefficient = 12.5 and 11.5 for *A_DISX* and *A_PROD*, respectively, both significant at the 5% level). Whereas *A_CFO* and *A_PROD* are significantly lower across the post-Higgs period (coefficient = -21.7 and -19.2 for *A_CFO*POST-HIGGS* and *A_PROD*POST_HIGGS*, respectively, both significant at the 5% level). Therefore, we find that cash-bidders have more manipulation pre-Higgs using discretionary expenses as compared to stock bidders, and this difference is reduced in the post-Higgs period.

Panel B presents results using *A_TA* as the accrual manipulation measure. The results are slightly different from panel A. There is evidence that stock bidders engage in more income-increasing manipulation than cash bidders (coefficient of *A_TA* = 15.934; significant at the 5% level) in the full sample. However, there does not appear to be any

differences between pre- and post-Higgs periods as the coefficient for *A_TA*POST-HIGGS* is insignificant in the final column. Furthermore, cash bidders engage in more income-increasing manipulation than stock bidders using real operating activities that reduce cash from operations and discretionary expenses (coefficient of *A_CFO* = 4.030; significant at the 5% level and coefficient of *A_DISX* = 8.896; significant at the 1% level). Across the two periods, cash bidders have higher income-increasing abnormal cash from operations in the pre-Higgs periods which is reversed in the post-Higgs period (coefficient of *A_CFO* = 17.555; significant at the 5% level and coefficient of *A_CFO*POST-HIGGS* = -34.583, significant at the 5% level).

Overall, there is some evidence that in the full sample stock bidders engage in income-increasing manipulation using accruals but not real activities. Furthermore, cash bidders engage in income-increasing manipulation using real activities (discretionary expenses) in the full sample. There are limited changes across the two periods before and after the Higgs enactment, which precludes a shift from accrual to real activities manipulation.

5. Conclusion

This study investigates accrual and real-based earnings management for a sample of 197 UK acquiring firms from 12 different industries over the period 1990-2009. The findings of this study are somewhat consistent with those of Erickson and Wang (1999), Louis (2004), and Botsari and Meeks (2008) reporting evidence that stock-financed acquirers tend to report positive abnormal accruals prior to an M&A bid announcement. Furthermore, stock bidders engage in more positive accrual earnings management than

cash bidders since the latter lack the motivation to influence their share value before completing the bid.

The recommendations set out in the Higgs Report in 2003 are meant to restrain firms from engaging in accrual earnings management activities (Iqbal and Strong, 2010); Habbash *et al.*, 2013a; 2013b). However, we find no evidence of significant differences in accrual manipulation in stock bidders between the post-Higgs and the pre-Higgs periods.

The results also reveal that cash bidders engage in real earnings manipulation through lower discretionary expenses, possibly in order to enhance cash availability for the bid. This study contributes to the literature by being the first to examine the incidence of pre-merger real-based earnings management as well as accrual-based earnings management by UK acquirers. It is also the first UK study to investigate earnings management behavior around changes to the corporate governance environment. The findings of this study are of potential interest to policy makers, professionals, and academics especially in that the issue of earnings management in the UK is of great importance for these groups. This study gives these parties awareness about the engagement of UK acquirers in earnings management activities.

As with all research, there are limitations. Firstly, this research focuses on a specific setting, mergers and acquisitions. Therefore, the findings may not be generalizable to other specific corporate events. In addition, a major focus of our empirical investigation is on the pre-merger accrual and real-based earnings management of UK acquiring firms around changes in the UK corporate governance regime, brought about by the Higgs

Report (2003). Clearly the results associated with this strand of research might well not be applicable in other countries.

This study investigates accrual and real-based earnings management for public acquiring firms that acquire public targets. Another avenue for further research is to investigate the same scenario of analysis when bidding firms acquire private targets especially since different levels of information asymmetry may exist. Researchers can also examine real-based earnings management for other UK corporate events such as seasoned equity offerings (SEOs) and initial public offerings (IPOs).

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Table 1: Sample Selection Procedures

Description	N
Initial Sample: Public Acquirer/Target between 01/01/1990 to 31/12/2009	**2,252**
EXCLUDE:	
Acquirer/Target from the Financial Sector	831
Unsuccessful deals[a]	256
Deals whose method of payment are neither pure stock nor pure cash	492
Share repurchases[b]	297
Reverse takeovers[c]	15
Missing Datastream codes	28
Unavailable accounting and share price data in Datastream[d]	108
Acquisition by same acquirer in adjacent years	28
Final Sample	**197**

[a] Unsuccessful bids include rumour, discontinued rumour and withdrawn deals

[b] Deals in which both the acquirer and the target are the same

[c] According to Thomson Financial (TF) deal definitions, a reverse takeover indicates a merger in which the acquiring company offers more than 50% of its equity as consideration offered to the target company resulting in the target company becoming the majority owner of the new company. These deals are excluded because they could confound the results.

[d] In addition to the unavailable data, few observations for some control variables are deleted to mitigate the effects of outliers. The mean plus/minus 3 Standard deviation rule is used to check the distribution of these variables and exclude extreme values.

Table 2: Distribution of Sample Acquirers by Year and Industry

Panel A: Distribution of sample acquirers by year						
Year	Stock Bids		Cash Bids		All Bids	
	Freq.	%	Freq.	%	Freq.	%
1990	1	1.33	5	4.10	6	3.05
1991	3	4.00	9	7.38	12	6.09
1992	1	1.33	9	7.38	10	5.08
1993	1	1.33	5	4.10	6	3.05
1994	3	4.00	7	5.74	10	5.08
1995	1	1.33	11	9.02	12	6.09
1996	4	5.33	6	4.92	10	5.08
1997	4	5.33	9	7.38	13	6.60
1998	5	6.67	7	5.74	12	6.09
1999	10	13.33	6	4.92	16	8.12
2000	3	4.00	7	5.74	10	5.08
2001	4	5.33	5	4.10	9	4.57
2002	2	2.67	3	2.46	5	2.54
2003	7	9.33	3	2.46	10	5.08
2004	4	5.33	3	2.46	7	3.55
2005	5	6.67	8	6.56	13	6.60
2006	3	4.00	6	4.92	9	4.57
2007	4	5.33	5	4.10	9	4.57
2008	3	4.00	2	1.64	5	2.54
2009	7	9.33	6	4.92	13	6.60
Total	**75**	**100%**	**122**	**100%**	**197**	**100%**

Panel B: Distribution of sample acquirers by industry

Industry	Stock Bids		Cash Bids		All Bids	
	Freq.	%	Freq.	%	Freq.	%
Consumer Non-durables	5	6.67	2	1.64	7	3.55
Consumer durables	3	4.00	6	4.92	9	4.57
Manufacturing	8	10.67	15	12.30	23	11.68
Energy	3	4.00	1	0.82	4	2.03
Chemicals	1	1.33	3	2.46	4	2.03
Business Equipment	7	9.33	10	8.20	17	8.63
Telecommunications	2	2.67	7	5.74	9	4.57
Utilities	2	2.67	5	4.10	7	3.55
Wholesale and Retail	6	8.00	10	8.20	16	8.12
Healthcare	12	16.00	7	5.74	19	9.64
Finance	3	4.00	7	5.74	10	5.08
Other	23	30.67	49	40.16	72	36.55
Total	**75**	**1**	**122**	**1**	**197**	**1**

Industries are based on Fama French 12 classification.

Table 3: Pearson Correlation Coefficients (p-values) between Accrual-based and Real-based Earnings Management Proxies

	A_TA	A_CFO	A_DISX	A_PROD
A_CA	0.893	-0.521	-0.166	0.067
	(0.000)	(0.000)	(0.036)	(0.376)
A_TA		-0.596	-0.115	-0.028
		(0.000)	(0.149)	(0.715)
A_CFO			0.069	-0.146
			(0.388)	(0.051)
A_DISX				-0.340
				(0.000)

A_CA = Discretionary current accruals measured using Modified Jones Model with Kothari et al. (2005) modifications,
A_TA = Discretionary total accruals measured using Modified Jones Model with Kothari et al. (2005) modifications,
A_CFO = Abnormal Cash Flow from Operations,
A_DISX = Abnormal Discretionary Expenses,
A_PROD = Abnormal Production Costs.

Table 4: Accrual-based Earnings Management Proxies Derived from the Cross-Sectional Modified-Jones Model based on the Cash Flow (CF) Approach

This table presents accrual-based earnings management measures for the acquirers in the year prior to the deal's announcement date. The results are based on parametric (t-tests for the means) and non-parametric (Wilcoxon signed-ranks test for the medians) tests. P-values are given in parentheses and significant results are marked in bold. ***, **, * denote one-tailed significance at 1%, 5%, and 10% level respectively.

	All Bids		Stock Bids		Cash Bids		Difference Stock - Cash	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
A_CA	**0.019****	**0.018****	**0.031***	**0.039*****	0.012	0.000	0.019	**0.039****
P-Value	(0.046)	(0.043)	(0.061)	(0.008)	(0.193)	(0.366)	(0.210)	(0.038)
No. of Obs.	197		75		122			
A_TA	0.005	-0.003	0.014	**0.024***	0.000	-0.007	0.014	**0.031****
P-Value	(0.274)	(0.458)	(0.182)	(0.068)	(0.489)	(0.112)	(0.237)	(0.046)
No. of Obs.	193		73		120			

A_CA = Discretionary current accruals measured using Modified Jones Model with Kothari et al. (2005) modifications, *A_TA* = Discretionary total accruals measured using Modified Jones Model with Kothari et al. (2005) modifications.

Table 5: Real-based Earnings Management Proxies

The following table presents real-based earnings management measures for the acquirers in the year prior to the deal's announcement date. The results are based on parametric (t-tests for the means) and non-parametric (Wilcoxon signed-ranks test for the medians) tests. P-values are given in parentheses and significant results are marked in bold. ***, **, * denote one-tailed significance at 1%, 5%, and 10% level respectively.

	All Bids		Stock Bids		Cash Bids		Difference Stock - Cash	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
A_CFO	0.011	**0.015*****	0.015	**0.003***	0.008	**0.016*****	0.006	-0.013
P-Value	(0.284)	(0.002)	(0.223)	(0.084)	(0.384)	(0.001)	(0.426)	(0.156)
No. of Obs.	197		75		122			
A_DISX	**-0.039****	**-0.058*****	0.051	-0.022	**-0.091*****	**-0.106*****	**0.142*****	**0.084*****
P-Value	(0.027)	(0.001)	(0.103)	(0.153)	(0.000)	(0.000)	(0.001)	(0.001)
No. of Obs.	160		59		101			
A_PROD	0.013	**0.025****	-0.020	0.011	**0.031****	**0.030****	**-0.051***	-0.019
P-Value	(0.194)	(0.042)	(0.243)	(0.233)	(0.045)	(0.022)	(0.068)	(0.139)
No. of Obs.	179		61		118			

A_CFO = Abnormal Cash Flow from Operations,
A_DISX = Abnormal Discretionary Expenses,
A_PROD = Abnormal Production Costs.

Table 6: Accrual-based Earnings Management Proxies derived from the Cross-Sectional Modified-Jones Model based on the Cash Flow (CF) Approach for the Pre- and Post-Higgs Bids with the Method of Payment

This table presents accrual-based earnings management measures for the acquirers in the year prior to the deal's announcement date. The results are based on parametric (t-tests for the means) and non-parametric (Wilcoxon signed-ranks test for the medians) tests. P-values are given in parentheses and significant results are marked in bold. **, * denote one-tailed significance at 5%, and 10% level respectively.

	Stock Bids						Cash Bids				Difference between Stock and Cash bids			
	Pre-Higgs Bids		Post-Higgs Bids		Difference Pre-Post		Pre-Higgs Bids		Post-Higgs Bids		Pre-Higgs Bids		Post-Higgs Bids	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
A_CA	**0.022***	**0.031****	0.043	**0.063***	-0.022	-0.032	0.010	-0.003	0.017	0.021	0.012	**0.033***	0.026	0.042
P-Value	(0.095)	(0.041)	(0.148)	(0.097)	(0.297)	(0.197)	(0.288)	(0.485)	(0.183)	(0.228)	(0.306)	(0.071)	(0.283)	(0.200)
No. of Obs.	42		33				89		33					
A_TA	**0.023****	**0.029****	0.002	0.024	0.021	0.005	0.000	-0.007	0.001	-0.007	0.023	**0.036****	0.001	0.030
P-Value	(0.049)	(0.045)	(0.473)	(0.442)	(0.264)	(0.266)	(0.498)	(0.123)	(0.481)	(0.354)	(0.120)	(0.017)	(0.487)	(0.487)
No. of Obs.	41		32				87		33					

A_CA = Discretionary current accruals measured using Modified Jones Model with Kothari et al. (2005) modifications,
A_TA = Discretionary total accruals measured using Modified Jones Model with Kothari et al. (2005) modifications.

Table 7: Real-based Earnings Management Proxies for the Pre- and Post-Higgs Bids with the Method of Payment

The following table presents real-based earnings management measures for the acquirers in the year prior to the deal's announcement date. The results are based on parametric (t-tests for the means) and non-parametric (Wilcoxon signed-ranks test for the medians) tests. P-values are given in parentheses and significant results are marked in bold. ***, **, * denote one-tailed significance at 1%, 5%, and 10% level respectively.

	Stock Bids						Cash Bids				Difference between Stock and Cash bids			
	Pre-Higgs Bids		Post-Higgs Bids		Difference Pre-Post		Pre-Higgs Bids		Post-Higgs Bids		Pre-Higgs Bids		Post-Higgs Bids	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
A_CFO	0.004	-0.015	0.029	0.017	-0.024	-0.032	-0.021	**0.009****	**0.087*****	**0.065*****	0.025	-0.024	-0.058	-0.048
P-Value	(0.402)	(0.464)	(0.234)	(0.128)	(0.285)	(0.126)	(0.291)	(0.023)	(0.002)	(0.002)	(0.272)	(0.142)	(0.115)	(0.170)
No. of Obs.	42		33				89		33					
A_DISX	0.053	-0.027	0.048	0.014	0.005	-0.041	**-0.061*****	**-0.086*****	**-0.165*****	**-0.142*****	**0.114****	**0.059****	**0.212****	**0.156*****
P-Value	(0.132)	(0.476)	(0.260)	(0.288)	(0.477)	(0.414)	(0.001)	(0.001)	(0.001)	(0.001)	(0.014)	(0.037)	(0.010)	(0.004)
No. of Obs.	36		23				72		29					
A_PROD	-0.002	0.002	-0.049	0.018	0.047	-0.016	0.025	0.017	0.049	0.075	-0.026	-0.015	-0.097*	-0.057
P-Value	(0.473)	(0.348)	(0.214)	(0.445)	(0.243)	(0.462)	(0.109)	(0.088)	(0.121)	(0.062)	(0.220)	(0.265)	(0.094)	(0.171)
No. of Obs.	37		24				87		31					

A_CFO = Abnormal Cash Flow from Operations,
A_DISX = Abnormal Discretionary Expenses,
A_PROD = Abnormal Production Costs.

Table 8: Multivariate Analysis for Accrual and Real-based Earnings Management for the Pre- and Post-Higgs Bids with the Method of Payment

Panel A: Current Accruals and Real-based Earnings Management

The following table presents coefficients and p-values from logistic regressions of the form:

$$STK = a_0 + a_1 A\_CA + a_2 A\_CFO + a_3 A\_DISX + \alpha_4 A\_PROD + \alpha_5 PREM + \alpha_6 INDR$$
$$+ a_7 SIZE + a_8 LEV + a_9 MTBV + \alpha_{10} OWN + \sum \alpha_j IND + \sum \alpha_t \, year + \varepsilon$$

$$STK = a_0 + a_1 A\_CA + a_2 A\_CFO + a_3 A\_DISX + \alpha_4 A\_PROD + \alpha_5 POST - HIGGS +$$
$$\alpha_6 A\_CA(A\_TA)*POST - HIGGS + \alpha_7 A\_CFO*POST - HIGGS + \alpha_8 A\_DISX*POST - HIGGS +$$
$$\alpha_9 A\_PROD*POST - HIGGS + \alpha_{10} PREM + \alpha_{11} INDR + a_{12} SIZE + a_{13} LEV + a_{14} MTBV$$
$$+ \alpha_{15} OWN + \sum \alpha_j IND + \sum \alpha_t \, year + \varepsilon$$

Variable	Coeff.	p-value	Coeff.	p-value
Intercept	6.342*	0.068	16.481**	0.014
A_CA	3.231	0.207	-3.135	0.375
A_CFO	1.367	0.185	3.248	0.214
A_DISX	**5.961****	**0.016**	**12.510***	**0.050**
A_PROD	-2.115	0.229	**11.545***	**0.085**
POST-HIGGS			-6.753	0.127
*A_CA*POST-HIGGS*			16.341	0.101
*A_CFO*POST-HIGGS*			**-21.665****	**0.013**
*A_DISX*POST-HIGGS*			1.732	0.420
*A_PROD*POST-HIGGS*			**-19.154****	**0.038**
PREM	-0.006	0.347	-0.063**	0.026
INDR	0.301	0.375	2.248*	0.087
SIZE	-0.857*	0.097	-1.057	0.104
LEV	-4.582	0.118	-7.192	0.101
MTBV	-0.087	0.201	-0.296**	0.043
OWN	-0.027	0.135	0.020	0.340
Industry Dummies	YES		YES	
Year Dummies	YES		YES	
N	107		107	
Likelihood ratio	68.236		84.957	
P-value	0.003		0.001	

Panel B: Total Accruals and Real-based Earnings Management

The following table presents coefficients and p-values from logistic regressions of the form:

$$STK = a_0 + a_1 A\_TA + a_2 A\_CFO + a_3 A\_DISX + \alpha_4 A\_PROD + \alpha_5 PREM + \alpha_6 INDR$$
$$+ a_7 SIZE + a_8 LEV + a_9 MTBV + \alpha_{10} OWN + \sum \alpha_j IND + \sum \alpha_t\, year + \varepsilon$$

$$STK = a_0 + a_1 A\_TA + a_2 A\_CFO + a_3 A\_DISX + \alpha_4 A\_PROD + \alpha_5 POST - HIGGS +$$
$$\alpha_6 A\_CA(A\_TA)*POST - HIGGS + \alpha_7 A\_CFO*POST - HIGGS + \alpha_8 A\_DISX*POST - HIGGS +$$
$$\alpha_9 A\_PROD*POST - HIGGS + \alpha_{10} PREM + \alpha_{11} INDR + a_{12} SIZE + a_{13} LEV + a_{14} MTBV$$
$$+ \alpha_{15} OWN + \sum \alpha_j IND + \sum \alpha_t\, year + \varepsilon$$

Variable	Coeff.	p-value	Coeff.	p-value
Intercept	8.110**	0.037	24.689**	0.047
A_TA	**15.934****	**0.012**	**60.908****	**0.027**
A_CFO	**4.030****	**0.018**	**17.555****	**0.026**
A_DISX	**8.896*****	**0.006**	23.302	0.101
A_PROD	-1.058	0.370	10.866	0.195
POST-HIGGS			-2.957	0.405
*A_TA*POST-HIGGS*			-26.768	0.117
*A_CFO*POST-HIGGS*			**-34.583****	**0.014**
*A_DISX*POST-HIGGS*			0.461	0.487
*A_PROD*POST-HIGGS*			**-28.114****	**0.039**
PREM	-0.003	0.429	-0.074**	0.036
INDR	0.650	0.265	5.841**	0.045
SIZE	-1.186**	0.049	-2.943**	0.038
LEV	-5.056	0.112	-3.202	0.327
MTBV	-0.169*	0.072	-0.637**	0.023
OWN	-0.040*	0.065	-0.073	0.119
Industry Dummies	YES		YES	
Year Dummies	YES		YES	
N	107		107	
Likelihood ratio	74.377		94.826	
P-value	0.001		0.001	

A_CA = Discretionary current accruals measured using Modified Jones Model with Kothari et al. (2005) modifications,
A_TA = Discretionary total accruals measured using Modified Jones Model with Kothari et al. (2005) modifications,
A_CFO = Abnormal Cash Flow from Operations,
A_DISX = Abnormal Discretionary Expenses,
A_PROD = Abnormal Production Costs,

STK = Dummy variable taking the value of 1 if the acquisition was financed by stock and 0 if financed by cash,

PREM = Percentage premium paid by the acquirer with respect to the target's share price four weeks prior to the announcement date as provided by Thomson One Banker;

INDR = Dummy variable for industry relatedness of the merging firms which takes the value of 1 if the acquirer and target have the same 2-digit SIC Codes

SIZE = Size of the acquirer as measured by the log of its total assets, from Datastream;

LEV = Leverage as measured by the acquirer's total debt divided by total asset, both from Datastream;

MTBV = Market-to-book value of the acquirer defined as the market value of the common equity divided by the book value of the common equity the year before the merger announcement, both from Datastream;

OWN = Total percentage of shares held by outsiders holding 5% or more of total shares, from company's annual report.

Significant results for coefficients of accrual and real-based measures are marked in bold.

***, **, * denote one-tailed significance at 1%, 5%, and 10% level respectively.