THE IMPACT OF MANAGERIAL TOOLS ON MEETING OR BEATING ANALYST FORECASTS, ANALYST REACTIONS, AND INFORMATION ASYMMETRY: EVIDENCE FROM THE UK

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ABSTRACT

Since 2005, listed firms in the UK have been required to adopt the International Financial Reporting Standards (IFRS) to meet international accounting standards requirements. Policymakers expected that the adoption of IFRS would lead to increased transparency and would improve financial reporting quality. Despite a number of studies conducted in the UK examining the impact of these standards on managerial tools, there is a lack of empirical evidence on how managers meet or beat analyst forecasts post-IFRS. The issue is that managers intentionally target analyst earnings estimates; however, whether analysts are motivated to collaborate with managers to benefit each other is an interesting question that remains unanswered in the literature.

The significance of this relationship has an impact on the level of information asymmetry in financial markets. This managerial practice is more likely to influence investor trading behaviour, as inside information gives investors an advantage and helps them to maximise profit. This thesis is essential as it links three market players, managers, analysts and investors, in order to provide empirical evidence regarding the impact of these managerial tools on the UK market. Therefore, this thesis was guided by the following objectives: to investigate the tools that managers use to meet or beat analyst forecasts in the UK post-IFRS, how analysts react to this myopic managerial practice, and how managerial tools influence levels of information asymmetry. This study employed a quantitative approach and applied panel data for 280 firms listed in the FTSE All-Share Index between 2005 and 2015.

Based on analysis of panel multivariate regressions, the results show that UK managers prefer to use real earnings management and managerial guidance tools to hit analyst forecasts. Furthermore, the results show that analysts prefer to be guided by managers in order to maintain their relationship with management. This might indicate that analysts rely on managers to form their forecasts, and avoid annoying managers in order to retain this good association. The study also shows a positive association between real earnings management and information asymmetry. The evidence reveals that managers use this tool to mislead investors. The results of this thesis are consistent with the theoretical framework, which posits that managers engage in various managerial tools to maintain their own interests rather than shareholders' interests (agency theory). In order to maintain a good relationship with management, analysts make irrational decisions when forecasting firms' earnings to avoid the negative consequences of their current decisions (prospect theory). However, this managerial practice leads to increase information asymmetry among investors. Thus, the research has an interesting practical implication: IFRS adoption eventually increases comparability among countries but does not improve the quality of UK financial reporting. The UK regulator should intervene to monitor the integrity of financial reporting and request further voluntary accounting information be published for investors. Furthermore, external auditors should be more active and should perform sceptical audits, which requires designing procedures that challenge management assertions.

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LIST OF ABBREVIATIONS

Abbreviation	Stand for
IFRS	**I**nternational **F**inancial **R**eporting **S**tandards
NED	**N**on-**E**xecutive **D**irectors
FRS3	**F**inancial **R**eporting **S**tandard 3 (UK)
SOX	The **S**arbanes-**O**xley **A**ct (US)
GAAP	**G**enerally **A**ccepted **A**ccounting **P**rinciples
IASB	**I**nternational **A**ccounting **S**tandards **B**oard
FASB	**F**inancial **A**ccounting **S**tandards **B**oard
IFAC	The **I**nternational **F**ederation of **A**ccountants
CEOs	**C**hief **E**xecutive **O**fficers
CFOs	**C**hief **F**inancial **O**fficers
EPS	**E**arnings **P**er **S**hare
IPOs	**I**nitial **P**ublic **O**fferings
SEO	**S**eason **E**quity **O**fferings
OLS	**O**rdinary **L**eased **S**quare
FTSE	The **F**inancial **T**imes **S**tock **E**xchange
I/B/E/S	The **I**nstitutional **B**rokers' **E**stimate **S**ystem
ICB	**I**ndustry **C**lassification **B**enchmark
DVs	**D**ependent **V**ariables
IVs	**I**ndependent **V**ariables

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DECLARATION

I declare that the research contained in this thesis, unless otherwise formally indicated within the text, is the original work of the author. The thesis has not been previously submitted to this or any other university for a degree, and does not incorporate any material already submitted for a degree.

Signed:

Dated:

I dedicate this thesis to
my beloved wife, Hanan, and my beloved kids, Hoor, Daniya and Hamza
for their constant support and unconditional patience.

CHAPTER 1: INTRODUCTION

1.1 Research Background

A growing trend of accounting scandals has called the validity of earnings into question.[1] There is much debate over whether accounting information produced by managers can be reliable (Scott, 2009). The issue of earnings management has been rapidly gaining increased attention in academic research (Walker, 2013). Scholars have been motivated to seek reasons for why and how earnings are managed (Gore et al., 2007). Initially, it is essential to understand whether earnings management is ethical behaviour or not. To decide whether earnings management is ethical, it is necessary to consider whether it is judged to be acceptable or unacceptable behaviour (Merchant and Rockness, 1994). Pierce (2007) states that many scholars mention the 'slippery slope' when there is an ethical ambiguity in regards to earnings management. Pierce reveals that this occurs when firms (or individuals) fail to identify ethical issues or future ethical issues in a specific situation. It could be assumed that there are no ethical consequences, but then over time the issue becomes more serious than was expected. Yaping (2005) documents that earnings management involves using deliberate steps through exercising discretion or applying restructuring activities that are allowed by accounting standards and regulations.

However, this myopic behaviour on the part of management creates a conflict of goals between managers and shareholders, which makes it difficult to verify that the management is doing what it is expected to do by the shareholders (Eisenhardt, 1989). Scott (2009) claims that earnings management reduces the transparency and reliability of financial reporting. Managers usually avoid disclosing full information about firm performance in order to control their private benefits (Nagar et al., 2003). They often withhold bad news to avoid an adverse reaction from investors, but good news tends to be

[1] One of the recent accounting scandals that occurred in the UK was related to the Tesco retail store. In late 2014 there was considerable debate in the business press about the Tesco dilemma, which captured the public attention. Pre-tax profits declined from £1.39 billion to £112 million in the first six months of 2014 and its stock market value dropped by £4 billion in one year. It was found that the profit has been overstated by $250 million and the share prices reached £1.71 in October 2014, compared to £4 in April 2013 (Poulter, 2014).

leaked to the market (Kothari et al., 2009). There are many incentives that encourage managers to engage in managing earnings. The existing literature highlights various reasons and the most common are to obtain bonuses, avoid any debt-covenant violations, meet earnings benchmarks, choose the proper timing for equity issuance, or meet or beat analyst forecasts (e.g. Healy, 1985; Roychowdhury, 2006; Athanasakou et al., 2009; Nini et al., 2012; Jha, 2013; Athanasakou et al., 2011; Doyle et al., 2013; Fan and Liu, 2017). The literature shows that managers have developed various tools to meet their targets. The most popular tools that are documented in the literature are accrual earnings management, real earnings management, classification shifting and managerial guidance (Jones, 1991; Dechow et al.,1995; Matsumoto, 2002; Roychowdhury, 2006; McVay, 2006). This managerial practice becomes more serious and forces the regulators intervene when it becomes a game between managers and analysts. It has been argued that the critiques from stock market regulators and the business press are concentrated on the earnings game between these two key players in the market (Richardson et al., 2004). Analysts probably facilitate and encourage managers to use these tools to hit their earnings forecasts. Analysts fail in their role as independent intermediaries between firms and market participants as they fail to warn investors about accounting irregularities (Gavious, 2009).

Due to the interrelation between economies across countries, the adoption of a common accounting language for financial reporting has become an important issue to harmonise their accounting standards. The IFRS are issued by the International Accounting Standards Board (IASB). Standard setters and regulators are both interested to understand how IFRS adoption influences the quality of accounting information. This is not limited to countries that have already adopted these standards, but also those countries that plan to adopt these rules in the future (Ahmed et al., 2013). It has been claimed that in spite of the transition in 2005 to the IFRS, the costs and benefits of this adoption are unclear (De George et al., 2016). For instance, many countries agreed to adopt the IFRS as they expected that the use of the IFRS would lead to increased transparency and would improve financial reporting quality (Tarca, 2004; Barth et al., 2008; Jeanjean and Stolowy, 2008). Iatridis (2010) claims that there are several benefits to IFRS adoption. These benefits are not limited to harmonising accounting practices across countries, but also

include higher comparability, lower transaction costs and enhancement of international investments among adopters. It has been suggested that the IFRS are considered to be high quality accounting standards, but this does not guarantee provision of high quality financial reports. There are other reasons that could contribute to a high quality of financial reporting, and these include managerial incentives, accounting enforcement and economic forces (De George et al., 2016).

Moreover, the existing studies provide contradicting results whether IFRS adoption allows to improve accounting quality (e.g. Barth et al., 2008; Daske et al., 2008; Jeanjean and Stolowy, 2008; Chen et al., 2010; Iatridis, 2010; Chua et al., 2012; Ahmed et al., 2013; Bouchareb et al., 2014; Boumediene et al., 2014; Navarro-García and Madrid-Guijarro, 2014; Müller, 2014; Daske et al., 2013; Doukakis, 2014; Christensen et al., 2015; Capkun et al., 2016; Zalata and Roberts, 2017; Malikov et al., 2018). It has been documented that there are various reasons that could lead researchers to provide contradicting results. Among these are a lack of clear guidance on the implementation process of these standards and the flexibility of accounting choices that provide subjective estimates, which allow managers to take advantages of these standards (Capkun et al., 2016).

Therefore, the importance of conducting this research post-IFRS is to provide empirical evidence of the impact of IFRS adoption on managerial tools. The researcher in this thesis examine the tools that managers utilise in the UK after IFRS implementation. In general, the effects of IFRS adoption on managerial tools rely on whether these standards have the ability to detect or reduce such managerial behaviour. A strong set of standards would probably reduce managerial discretion in regards to accounting choices, or restrict their intentions. Therefore, if the IFRS are of higher quality than the UK's Generally Accepted Accounting Principles (GAAP), then it would be expected that the adoption of the IFRS in the UK would lead to improvements in financial reporting and a reduction in such managerial behaviour. On the contrary, if the IFRS are of lower quality and allow managers to use opportunistic managerial tools more easily than the UK GAAP, then it would be expected that these standards will reduce the reliability of the accounting numbers reported in financial statements.

Thus, this thesis aims to address this essential research question. The following provides a summary of the literature review and identifies the literature gap.

1.2 Prior Literature and Research Gap

1.2.1 Managerial tools to meet or beat analyst forecasts

Financial information is essential for external users to evaluate firm performance. From this standpoint, managers become concerned that published accounting information could lead to a negative market reaction to their stock prices. Furthermore, managers are encouraged to use these tools because the market rewards them with better earnings performance (Zang, 2012), and firms that meet or beat analyst expectations frequently are offered lower auditing fees compared with others (Rickling et al., 2013). This evidence is supported by several studies (e.g. McVay, 2006; Lin et al., 2006; Bhojraj et al., 2009; Athanasakou et al., 2009: Fan et al., 2010; Barua et al., 2010; Athanasakou et al., 2011; Haw et al., 2011; Shirato and Nagata, 2012; Doyle et al., 2013; Fan and Liu, 2017).

This thesis focuses on the UK context; prior studies show that fewer studies have been conducted in the UK to examine the tools that UK firms use to meet or beat analyst forecasts (e.g. Athanasakou et al., 2009; Athanasakou et al., 2011). For example, Athanasakou et al. (2009) find that UK firms only use managerial guidance tools to meet or beat analyst forecasts. However, Athanasakou et al. (2011) document that UK firms use the managerial guidance and classification shifting tools to hit analyst expectations. The second tool is not preferred, as the equity market does not reward firms that hit analyst targets through classification shifting. The focus of prior studies in the UK was on the pre-IFRS adoption period (UK GAAP). Athanasakou et al. (2011) suggest that IFRS adoption could increase the scope of managerial guidance and propose that this area of research could be investigated further in the post-IFRS era.[2]

[2] This thesis focuses on the post-IFRS period, while previous studies in the UK were conducted under UK GAAP. In this regard, the Accounting Standards Board (2003) has highlighted the main differences between the UK GAAP and the IFRS, which are summarised in Appendix C. Horton and Serafeim (2010) mention that the core differences are related to employee benefits, leases, share-based payments, intangible assets, income tax and financial instruments.

There is no consensus among scholars on the impact of IFRS on managerial tools. This disagreement divides the literature into two streams of researchers. The first stream suggests that IFRS adoption improves accounting quality and this contributes to a reduction in managerial practice (e.g. Barth et al., 2008; Chen et al., 2010; Iatridis, 2010; Chua et al., 2012; Bouchareb et al., 2014; Boumediene et al., 2014; Navarro-García and Madrid-Guijarro, 2014; Müller, 2014). Further, IFRS adoption is essential to improving analyst forecasts (e.g. Hodgdon et al., 2008; Byard et al., 2011; Jiao et al., 2012; Horton et al., 2013). Byard et al. (2011) document that absolute forecast errors and forecast dispersion were reduced for mandatory IFRS adopters. However, they suggest that the IFRS improve the analyst information environment only if changes are significant and within strong enforcement regimes. Jiao et al. (2012) show that switching to IFRS for European listed companies leads to an increase in forecast accuracy, and this is consistent with the argument that IFRS adoption improves financial reporting quality. It also improves the abilities of the analyst to forecast earnings after switching. Moreover, Horton et al. (2013) find that consensus forecast errors were reduced post-IFRS adoption. They document that analysts could benefit from both the improvement in the quality of information and increased accounting comparability.

On the contrary, the second stream of researchers argues that IFRS adoption does not improve accounting quality and could increase use of myopic managerial practice (e.g. Daske et al., 2008; Jeanjean and Stolowy, 2008; Ahmed et al., 2013; Daske et al., 2013; Doukakis, 2014; Christensen et al., 2015; Capkun et al., 2016; Zalata and Roberts, 2017; Malikov et al., 2018). For instance, Lin et al. (2012) find that switching from the US GAAP to the IFRS increased earnings management practice. This opportunistic behaviour reduced accounting quality compared to the US GAAP period. Doukakis (2014) find no evidence to suggest that IFRS adoption has any effect on managerial tools. Therefore, whether IFRS adoption has any impact on managerial tools used to meet or beat analyst forecasts in the UK post-IFRS is an empirical question on which there is insufficient evidence in the existing literature. This study attempts to address this gap in the current research.

1.2.2 Analyst reactions to managerial tools

The earnings game between managers and analysts has received growing attention from regulators, after accounting scandals such as Enron, HealthSouth, Tyco, Dot-Com and WorldCom (Richardson et al., 2004). Analysts were blamed for the collapse of large companies (Cowen et al., 2006; Gavious, 2009). Chang and Choi (2017) claim that analysts face two difficult situations, either to maintain a good relationship with managers or maintain a good reputation in the market. The security market seems to place increased pressure on analysts to build a relationship with managers (Behn, Gotti, Herrmann, & Kang, 2013). Due to market pressure, analysts push firms to meet their expectations and managers respond to this because they believe that overvalued stocks could cause a problem for their firms (Fuller and Jensen, 2002).

Analysts are professionals, but they make regular errors in forecasting earnings. These errors could be related to psychological factors (Abarbanell and Bernard, 1992). This is because analysts work in a complex environment and are more likely to face a variety of different incentives, which leads the rationality of their expectations to be erratic (Löffler, 1998). The existing research shows that analysts prefer to issue positive reports for their close clients, rather than damaging their relationship with management (Trueman, 1990; Francis and Philbrick, 1993; Richardson et al., 2004). This relationship is essential to accessing private information (Francis and Philbrick, 1993; Dugar and Nathan, 1995; Das et al., 1998; Lim 2001; Chen and Matsumoto, 2006; Mayew, 2008; Gu et al., 2013; Soltes, 2014; Brown et al., 2015). The focus of prior research is on how managers meet or beat analyst forecasts; however, analysis of the earnings game is incomplete because most existing studies do not consider how analysts react to these managerial tools. Previous literature tends to ignore the fact that firms' objectives are to respond to analyst forecasts (Liu, 2005). Moreover, Eiler et al. (2016) have focused current researchers' attention on the importance of investigating the relationship between real earnings management and analyst forecasts in order to understand the earnings game between managers and analysts. Therefore, how analysts react to managerial tools is an essential empirical question, which this thesis intends to answer.

1.2.3 Information asymmetry and managerial tools

Such managerial discretion in financial reports is more likely to create an imbalance between the information that managers hold and the information that shareholders receive (Purwanti and Kurniawan, 2013). Investors find it difficult to make considerable investments when managers avoid reporting private information. Therefore, the quality of information obtained by investors influences their investment decisions in any equity market. It differentiates between informed investors who use their informational advantages to gain profits, compared to other investors who have less accessibility to this private information (Amiram et al., 2016). This imbalance of information creates information asymmetry. The presence of information asymmetry is more likely to cause the market to fail (Zerbe and McCurdy, 1999; Borooah, 2003). Wiyadi and Sasongko (2015) claim that the presence of information asymmetry is because of earnings management behaviour.

There is a debate among scholars over the impact of managerial tools on information asymmetry. It has been argued that it is not clear in the literature whether managers use these tools in order to mislead users (the opportunistic perspective) or to inform them with private information (the informative perspective) (e.g. Beneish, 2001; Mitra and Rodrigue, 2002; Jiraporn et al., 2008). The majority of prior literature seems to support the suggestion that managers use these tools opportunistically to mislead users (e.g. Roychowdhury, 2006; McVay, 2006; Lin et al., 2006; Athanasakou et al., 2009; Athanasakou et al., 2011; Nini et al., 2012; Jha, 2013; Doyle et al., 2013; Shu and Chiang, 2014; Fan and Liu, 2017). These studies are consistent with agency theory, which posits that managers use this opportunistic practice to mislead users of accounting information, and this more probably leads to an increase in information asymmetry.

In contrast, some scholars suggest that managers employ these tools to provide users with private information that could lead them to make relevant investment decisions (e.g. Holthausen, 1990; Watts and Zimmerman, 1990; Healy and Palepu, 1993; Subramanyam, 1996; Fields et al., 2001; Arya et al., 2003; Louis and Robinson, 2005; Jiraporn et al., 2008; Siregar and Utama, 2008; Rahman et al., 2013). For example, Arya et al. (2003) claim that earnings management is crucial as it gives more value to information than unmanaged

earnings. Lin et al. (2016) suggest that managers engage directly in business investing and operating decisions and thus it is easy for them to predict their future performance related to their earnings and future cash flow. Managers follow this practice to convey private information to external users. Thus, these studies are consistent with the theoretical base of signalling theory, which suggests that managers employ these managerial tools to convey private accounting information to users in the form of signals. These signals, according to this theory, are important as they lead to a reduction in information asymmetry. Therefore, the question of how managerial tools influence information asymmetry remains unanswered in the UK context, and in particular whether managers use an opportunistic approach or an informative approach is another interesting research area that this thesis attempts to address.

1.3 Research Aim and Objectives

To fill the research gaps identified in the previous sections, the researcher determines three primary objectives to achieve from conducting this research. Initially, whether IFRS adoption has an impact on managerial tools used to meet or beat analyst forecasts in the UK post-IFRS is an empirical question on which there is insufficient evidence in the existing literature. Thus, the first objective of this thesis is to examine the tools that managers use to hit analyst expectations post-IFRS. To achieve this objective the researcher tests the relationship between the meeting or beating analyst forecasts proxy and managerial tools (abnormal accruals earnings, abnormal real earnings activities, abnormal classification shifting and unexpected managerial guidance).

Furthermore, how analysts react to managerial tools is an interesting empirical question as there is lack of empirical evidence on this association. Therefore, the second objective is to examine analyst reactions to these managerial tools. To accomplish this goal, the researcher investigates the association between analyst reaction proxy and managerial measures.

Finally, the question of how managerial tools influence information asymmetry remains unanswered in the UK context, and whether managers in the UK use the opportunistic or informative approach is another interesting research area that this thesis attempts to address. Thus, the third objective is to examine the impact of managerial tools on information asymmetry which is achieved through testing the relationship between managerial tools and the information asymmetry.

1.4 Research Motivations

There are several incentives that motivated the researcher to conduct this research. First, due to major accounting scandals (e.g. Enron, HealthSouth, Tyco, Dot-Com and WorldCom), researchers have been attracted to and interested in investigating how managers meet or beat analyst forecasts. Thus, understanding and determining the tools that firms use to hit analyst estimates is essential for policymakers to take forward steps to mitigate these managerial practices and ensure that financial information is more relevant and reliable.

Second, the existing literature provides inconsistent evidence on the impact of the IFRS on managerial tools (e.g. Chua et al., 2012; Bouchareb et al., 2014; Boumediene et al., 2014; Navarro-García and Madrid-Guijarro, 2014; Doukakis, 2014; Müller, 2014; Christensen et al., 2015; Capkun et al., 2016; Zalata and Roberts, 2017; Malikov et al., 2018). However, recent studies conducted in the UK post-IFRS adoption found that UK firms are motivated to reclassify recurring items into non-recurring in order to inflate core earnings post-IFRS (e.g. Zalata and Roberts, 2015; Zalata and Roberts, 2017). Further evidence is provided by Malikov et al. (2018), who document an increasing trend for this tool post-IFRS, and they suggest that the IFRS provide managers with another opportunity to manage earnings. Therefore, based on this evidence, it is interesting to examine how managers hit analyst expectations after the introduction of IFRS. The results of this research will be essential for the UK's Financial Reporting Council (FRC), allowing them to take further steps to enhance and ensure that financial information is more transparent and credible.

Third, the critiques that come from stock market regulators and the business press are concentrated on the earnings game between managers and analysts (Richardson et al., 2004). The current research emphasises the importance of investigating the association between earnings management tools and analyst forecasts in order to understand the earnings game (Eiler et al., 2016). This provides a motivation to find out how analysts in the UK react to use of managerial tools. The findings would have an important implication for security regulators, because this suspect relationship could have an adverse impact on the capital allocation of the security market.

Fourth, information asymmetry has attracted the attention of numerous scholars in the existing accounting and finance literature. It has been argued that the impact of asymmetric information needs to be measured and tested empirically (Abosede and Oseni, 2011). Wiyadi and Sasongko (2015) claim that the presence of information asymmetry is because of earnings management behaviour. Investors are affected when managers avoid reporting private information. Informed traders use their informational advantages to gain profits, compared to other traders who have less accessibility to this private information (Amiram et al., 2016). The presence of asymmetric information may cause the market to fail (Zerbe and McCurdy, 1999; Borooah, 2003). It causes an increase in the cost of capital and influences investor trading behaviour unfavourably (Bhattacharya and Spiegel, 1991). Therefore, it is exciting to understand how the UK managers influence asymmetric information, and to determine the tools managers, in the UK, used to manage information symmetry levels.

Fifth, there is a huge debate among scholars over whether managerial tools are used to opportunistically mislead users or are beneficial to users. The disagreement divides researchers into two streams: the followers of the opportunistic perspective and the followers of the informative perspective. In spite of the fact that the majority of existing literature is in support of the first perspective (e.g. Roychowdhury, 2006; McVay, 2006; Lin et al., 2006; Athanasakou et al., 2009; Athanasakou et al., 2011; Nini et al., 2012; Jha, 2013; Doyle et al., 2013; Shu and Chiang, 2014; Fan and Liu, 2017), there have been many attempts to support the informative approach (e.g. Holthausen, 1990; Watts and Zimmerman, 1990; Healy and Palepu, 1993; Subramanyam, 1996; Fields et al., 2001; Arya et al., 2003; Louis and Robinson, 2005; Jiraporn

et al., 2008; Siregar and Utama, 2008; Rahman et al., 2013), and researchers have documented that managers use this approach to convey private information that is not available to outsiders. As this study is focused on the UK context, the UK stock market is considered to be active, and investors have strong protection rules (Iatridis, 2010). Thus, it is interesting to find out empirically the approach that UK managers favour.

1.5 Research Philosophy and Methodology

In this thesis, the researcher adopts the positivist position as a research philosophy. According to this position, the researcher views the world as an object (ontology), and in order to discover the world and understand the extent of tools that managers use, facts are obtained from the measurement of identified variables (epistemology) through secondary data. In this thesis, the researcher uses the quantitative approach to achieve the research objectives. Quantitative researchers often deal with numerical data to test hypothetical generalisations (Hoepfl, 1997). This approach is also used to measure and analyse the causal relationship between variables (Denzin and Lincoln, 2000). Mathematical techniques are then applied to interpret these numerical data, and the results are expressed via statistical analysis (Clark, 2005).

The data employed for this thesis are collected from the FTSE All-Share Index between 2005 and 2015. This thesis is based on secondary data, such as annual reports, stock prices and analyst forecasts. These data are extracted from reliable sources such as the Thomson Reuters DataStream and Thomson Reuters I/B/E/S databases. The initial sample of firms listed in the FTSE All-Share Index is 651 firms. However, financial institutions (Roychowdhury, 2006; Gunny, 2010), financial companies (Fama and French, 1992) and utility firms (Gunny, 2010) are excluded from the sample. Thus, the final sample used for this thesis is 280 firms. This study follows the Industry Classification Benchmark (ICB) approach; according to this classification firms are grouped into seven industries. These are industries, consumer goods, oil and gas, health care, consumer services, and technology. However, to deal with extreme values, this study follows prior studies (Gunny, 2010; Dechow et al., 2012; Zang, 2012; Alhadab et al., 2013; Doyle et al., 2013). Extreme

observations for all variables were winsorized at 1% and 99% of their distribution.

Regarding the research methodology, univariate analysis is performed to report the descriptive statistics. A correlation matrix is conducted to test the correlation and multicollinearity among variables. Several multivariate regressions are performed, such as pooled regressions, panel regressions (with fixed effect and random effect models), and panel logistic regressions (with fixed effect and random effect models), in order to examine the developed hypothesis. The dependent variables are meeting or beating analyst forecasts, analyst reaction, and information asymmetry. These key variables are regressed against managerial measures, which are working capital accrual, real earnings management, classification shifting and managerial guidance. Additional tests are performed to verify the robustness of the predicted variable, which include the combination of both pooled and panel regressions.

1.6 Research Contributions

This thesis contributes to the literature in several ways. Firstly, it contributes to the debate among scholars regarding the impact of IFRS on use of managerial tools. In this thesis, the results show that both real earnings management and managerial guidance are statistically significant, which indicates that managers in the UK are more likely to use these tools to meet or beat analyst forecasts under the restrictions of international accounting standards. Therefore, it supports prior research which suggests that IFRS adoption does not improve accounting quality and could increase use of opportunistic managerial tools (e.g. Daske et al., 2008; Jeanjean and Stolowy, 2008; Ahmed et al., 2013; Daske et al., 2013; Doukakis, 2014; Christensen et al., 2015; Capkun et al., 2016; Zalata and Roberts, 2017; Malikov et al., 2018). That is, managers can use substantial discretion even with IFRS adoption (Jeanjean and Stolowy, 2008; Doukakis, 2014).

Secondly, this study contributes to real earnings management research in the context of meeting or beating analyst expectations. In the existing literature, there is a lack of knowledge about real earnings management. The few cases that study real earnings have obtained mixed results (Lin et al., 2006; Athanasakou et al., 2011; Doyle et al., 2013). The results of the current study

are consistent with Doyle et al. (2013), who document that real earnings management is one of the core strategies that managers employ to meet or beat analyst forecasts. The results show a positive and statistically significant association between meeting or beating analyst forecasts and selling, general and administrative expenses. This supports the argument that real earnings management is used to hit analyst estimates.

Thirdly, this thesis extends previous research that focuses on managers' incentives to avoid reporting earnings losses (Burgstahler and Dichev, 1997; Degeorge et al., 1999; Phillips et al., 2003; Brown and Caylor, 2005; Roychowdhury, 2006; Ebaid, 2012; Hamdi and Zarai, 2012; Gilliam et al., 2015; Pududu and Villiers, 2016). In this thesis, the researcher documents that loss-making firms are highly motivated to employ real earnings management and managerial guidance in order to reduce the level of bad reactions to their negative earnings. Thus, the results of the current study are inconsistent with both Degeorge et al. (1999) and Matsumoto (2002). This study suggests that managers are concerned with the UK market reaction to their reported earnings. Thus, the most suitable tools to employ are real earnings management and managerial guidance, as they are less likely to be detected by regulators and external auditors.

Fourthly, as far as the researcher is aware this study is the first to examine analyst reactions to four different tools that managers might use to hit analyst expectations. Although prior studies claim that there is a game between firm managers and security analysts (e.g. Richardson et al., 2004; Baik and Jiang, 2006), these studies do not provide adequate empirical evidence to support their argument. In this thesis, the results show that on average approximately 52% of analysts kept their forecasts constant or downgraded their initial forecasts in order to allow managers to hit their estimates. This suggests that analysts would have a high chance of maintaining their relationship with management.

Fifthly, the current study's findings contribute to the previous literature on analyst optimism biases. They are consistent with prior studies that claim that analysts might compromise their accuracy to please managers, thus enabling them to access future information in the hands of management (e.g. Richardson et al., 2004; Ke and Yu, 2006; Barron and Liang, 2013; Mayew, 2008; Gu et al., 2013; Soltes, 2014; Brown et al., 2015). The results suggest

that analysts probably increase the chance of downgrading their forecasts when managers provide them with more guidance.

Sixthly, the results contribute to the previous literature on pessimistic analyst forecasts and stock recommendations. Abarbanell and Lehavy (2003) find that firms which are rated with buy recommendations are more likely to be involved in the use of earnings management tools. These firms tend to adjust their reported earnings to meet or beat analyst expectations. The results of the current study show that, although analysts provide pessimistic earnings forecasts before the earnings announcement, they still issue buy recommendations for these firms. This finding supports prior empirical results, which document that analysts initially provide optimistic forecasts and then issue pessimistic forecasts immediately before the earnings announcement (e.g. Tan et al., 2002; Ke and Yu, 2006; Barron and Liang, 2013).

Seventhly, this study provides new evidence of the impact of managerial tools on information asymmetry. To the best of the author's knowledge it is the first study that examines the effect of four different managerial tools on information asymmetry using UK evidence. Previous studies such as Abad et al. (2016) claim that research on the relationship between earnings management and information mainly focuses on accrual earnings management (Richardson, 2000; Bhattacharya et al., 2013), and little evidence is provided for real earnings management. The results show a strong and positive association between real earnings management and information asymmetry. They demonstrate that this tool leads to an increase in the level of asymmetric information. This is consistent with agency theory, which predicts that managers employ these managerial tools to mislead users. The attractive and notable result is that managers in the UK use the opportunistic approach. Real earnings management is used to mislead investors and managers prefer to use this technique as it is less likely to be detected by regulators or independent auditors.

Eighthly, the current study's findings contribute to the previous literature on the impact of IFRS on information asymmetry. These findings are inconsistent with prior studies (Leuz and Verrecchia, 2000; Abad et al., 2017; Turki et al., 2017) that claim that international standards appear to reduce the level of information asymmetry. The results support prior studies that these standards do not improve accounting quality and could increase use of

opportunistic managerial tools (e.g. Daske et al., 2008; Jeanjean and Stolowy, 2008; Ahmed et al., 2013; Daske et al., 2013; Doukakis, 2014; Christensen et al., 2015; Capkun et al., 2016; Zalata and Roberts, 2017; Malikov et al., 2018)

Finally, the results contribute to previous studies that document that larger firms may have better performance and that they also have advantages of economies of scale over small firms (e.g. Fama and French, 1995; Frank and Goyal, 2003; Jermias, 2008). These firms may have stable earnings compared to smaller firms. The results of this research show that firm size is negatively associated with the spread. This is consistent with the argument that larger firms tend to have strong internal control systems and competent auditors compared to smaller firms (Warfield et al., 1995). Further, larger firms are normally audited by large auditing firms and it can easily be detected if these firms engage in managing earnings (Francis et al., 1999).

1.7 Thesis Structure

Chapter two presents an overview of the literature on managerial tools. It begins with a discussion of earnings management definitions and highlights the two different perspectives on how researchers view earnings management practices. This chapter also discusses the various incentives that encourage managers to engage in these tools. This chapter then provides a review of the literature on the three main earnings management tools that are drawn from the existing literature, which are accrual earnings management, real earnings management and classification shifting. Then, it provides a review of the literature on the fourth tool, managerial guidance, and presents the incentives that encourage managers to engage in use of this particular tool. Finally, this is followed by a discussion of the regulatory dimensions of managerial tools, with a focus on the International Financial Reporting Standards (IFRS).

Chapter three discusses the theoretical framework of the thesis. To formulate the theoretical framework, this thesis is based on three theories: agency theory, prospect theory and signalling theory. Then, it describes the research philosophy, data collection, and reliability and validity of the research study.

Chapter four investigates the tools that managers use to meet or beat analyst forecasts post-IFRS. It begins with a brief discussion of the relevant literature and then identifies the research hypotheses that are developed based on prior studies. The subsequent sections describe the research methodology and sample selection. This is then followed by the empirical tests and results of the study. The final section of this chapter summarises the whole chapter and highlights its key findings.

Chapter five empirically examines the association between analyst reactions and managerial tools. The chapter starts with a review of the relevant literature and identifies the research gap which the study aims to fill. It then outlines the research methodology and the sample selection. Then, it reports the empirical tests and results. Finally, it provides a summary of the main results of the study.

Chapter six examines the impact of managerial tools on information asymmetry. The chapter begins with a review of the relevant literature and hypothesis development. It identifies a set of hypotheses to be tested empirically, which are based on prior literature. The chapter then provides a description of the research methodology and the sample size used for the study. Finally, it summarises the key findings of the chapter and future areas of research.

Chapter seven concludes the thesis, beginning with a summary of the gaps identified in previous research and the main results for the whole thesis. The chapter then discusses the practical implications for policymakers, investors and auditors. This thesis is subject to some potential limitations, like any other study, which are summarised in this chapter. Finally, this chapter provides some potential avenues for future research that could be of high interest for academics.

CHAPTER 2: LITERATURE REVIEW: MANAGERIAL TOOLS

2.1 Introduction

This chapter provides a review of the literature on different tools that managers utilise to mislead market participants. There are four main tools that are commonly used, according to the existing research: accrual earnings management, real earnings management, classification shifting and managerial guidance. This chapter first discusses how scholars define earnings management and highlights the core limitations of these definitions. It then addresses the various incentives that encourage managers to apply these tools. It reviews the literature on each tool in detail and highlights the key findings of prior studies. Finally, this chapter offers some discussion of the impact of international standards on opportunistic managerial practices and whether these standards restrict managerial behaviour.

2.2 Earnings Management

One core element of the definition of accounting is the communication of financial information to interested users, which might include any stakeholders who have an interest in the entity (Needles and Powers, 2011). Financial reporting is vital for many stakeholders, and managers are expected to produce relevant and reliable financial reporting. Relevancy in the context of financial reporting requires a firm to provide information that is useful for users. This information helps stakeholders to predict the outcomes of past, present and future events, which either guide them to confirm their prior decisions or to change them according to the circumstances (FASB, 2004). Therefore, information about the past performance of the firm, its present status and its future obligations are significant for users. In contrast, reliability is concerned with the quality of information, the degree to which it is free from material misstatements that may occur because of errors and frauds (FASB, 2004). The relevancy and the reliability elements are crucial considerations when preparing financial reporting, to increase its trust and integrity in the eyes of decision makers. However, the reality does not reflect that, even with the requirements of accounting standards.

There are a vast number of prior studies documenting the fact that discretion is a common behaviour used by management to misrepresent the true performance of a business (Healy, 1985; DeAngelo, 1986; Jones, 1991; Petroni, 1992; Dechow et al., 1995; Beaver and Engel, 1996; Kang and Sivaramakrishnan, 1995; Beneish, 1997; Beaver and McNichols, 1998; Kasznik, 1999; Phillips et al., 2003; Kothari et al., 2005). There might be opportunistic reasons behind managerial behaviour, and this raises the issue of earnings management in the context of the accounting literature. Hence, the trust and integrity of financial reporting have been questioned, especially after major corporate scandals such as Enron, HealthSouth, Tyco, Dot-Com and WorldCom. In general, in the accounting literature, earnings management has two perspectives: the opportunistic perspective and the informative perspective. The opportunistic approach treats the management of a firm as driven by their incentives, while the information approach considers the management's ability to communicate private information to other parties in order to ensure that financial reporting is more relevant (Beneish, 2001).

However, the majority of previous studies support the first viewpoint, and anecdotal evidence reveals that managers manage reported earnings in response to certain motives, which have significant consequences for different stakeholders (Black et al., 1998). For instance, managers might use earnings manipulations in order to obtain bonuses (Healy, 1985), avoid any debt-covenant violations (DeAngelo et al., 1994; Jaggi and Lee, 2002; Nini et al., 2012; Jha, 2013), meet earnings benchmarks (Roychowdhury, 2006), choose the proper timing for equity issuance (Kasznik, 1999; Teoh et al., 1998; Shivakumar, 2000; Shu and Chiang, 2014), or meet or beat analyst forecasts (McVay, 2006; Lin et al., 2006; Athanasakou et al., 2009; Athanasakou et al., 2011; Doyle et al., 2013; Fan and Liu, 2017).

In contrast, other studies support the informative perspective, in which managers may convey private information that is beneficial for stakeholders (Holthausen, 1990; Watts and Zimmerman, 1990; Healy and Palepu, 1993; Subramanyam, 1996; Fields et al., 2001; Arya et al., 2003; Louis and Robinson, 2005). For instance, it has been noted that earnings management improves earnings through reflecting economic value. Engaging managers in discretionary accruals helps them to forecast future cash flows (Subramanyam, 1996). Arya et al. (2003) claim that earnings management is important as it

provides more valuable information than unmanaged earnings. Another study related to the informative approach was conducted by Louis and Robinson (2005); they examine the effect of discretionary accruals around stock splits. They argue that managers predict favourable performance for a firm in order to convey confidential information through discretionary accruals.

However, Mitra and Rodrigue (2002) claim that previous studies fail to determine empirically whether the earnings management explored by the existing research follows the opportunistic perspective or the informative perspective. This part, therefore, aims to determine how academic scholars define earnings management in order to understand their positions in respect to these two perspectives. The main definitions are summarised in Table 2-1, and these are drawn from the existing literature. Armstrong et al. (2008) reveal that earnings management is a complex issue, and there is no specific definition accepted by scholars in the accounting literature for earnings management. Beneish (2001) claim that the existing definitions of earnings management do not provide a clear viewpoint on whether managers' intentions are to mislead users or to inform them.

For instance, as shown in Table 2-1, Davidson et al. (1987) indicate that managers exploit the advantages of the accounting methods and estimates that are allowed by the Generally Accepted Accounting Principles (GAAP) to make adjustments that meet their goals. An aggressive engagement in earnings management might lead to fraudulent behaviour in financial reporting if they violate GAAP boundaries (Rosner, 2003). Schipper's (1989) definition focuses on obtaining private gain, which requires some alterations to the actual earnings, whereas Healy and Wahlen (1999) place their emphasis more on managers' judgment in influencing contractual outcomes in order to mislead users. In the same vein, Strobl (2013) supports these definitions, but extends them to consider such behaviour as financial fraud. However, there is an inconsistency within these definitions, and it seems that researchers define it from the viewpoint of their perspectives. Thus, these definitions are limited in scope to the accrual earnings management tool, but earnings management can be done through other tools. Roychowdhury (2006) provides a comprehensive definition and determines that real earnings management is another tool used by managers. The definitions of Davidson et al. (1987), Schipper (1989), Healy and Wahlen (1999), Roychowdhury (2006), and Strobl (2013), therefore, are

more likely to follow the opportunistic perspective. However, Fields et al. (2001) focus on the informative approach and argue that managers use it to provide users with private information that could be useful for them. Scott (2009) also supports other definitions that suggest earnings management is used to achieve certain incentives, but he does not indicate whether these are used to inform users or to mislead them.

Table 2-1: Summary of earnings management definitions from previous studies

Study	Definition
Davidson et al. (1987) cited by Schipper (1989, p.92)	"The process of taking deliberate steps within the constraints of generally accepted accounting principles to bring about a desired level of reported earnings."
Schipper (1989, p.92)	"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 of operation of the process." He goes on to say: "A minor extension of this definition would encompass real earnings management, accomplished by timing investment or financing decisions to alter reported earnings or some subset of it."
Healy and Wahlen (1999, p.368)	"Occurs when managers use judgment in financial reporting and in structuring transactions to alter financial reports to either mislead stakeholder about the underlying performance of the company or to influence contractual outcomes that depend on reported accounting numbers."
Fields et al. (2001, p.260)	"Earnings management occurs when managers exercise their discretion over the accounting numbers with or without restrictions. Such discretion can be either firm value maximising or opportunistic."
Roychowdhury (2006, p.337)	"A departure from normal operational practices, motivated by managers' desire to mislead at least some stakeholders into believing that certain financial reporting goals have been met in the normal course of operations."
Scott (2009, p.403)	"The choice of accounting policies or actions that can affect earnings in order to achieve a specific objective."

Strobl (2013, p.450)	"Any activity that enables firms to overstate their true economic earnings. This includes cases of fraudulent accounting in which firms get auditors to approve statements that are inconsistent with accounting standards, as well as cases in which firms take actions within accepted accounting and legal standards to improve their accounting performance (e.g., accruals management)."

There are two key drawbacks that can be summarised from these definitions. The first limitation is that these definitions focus more on the opportunistic perspective and overlook the informative perspective. This could justify why the majority of subsequent studies adopt this approach from the standpoint that earnings management is used to mislead users. The other drawback is that these definitions identify accrual earnings management as the main tool used by managers (Healy, 1985; DeAngelo, 1986; Jones, 1991; Petroni, 1992; Dechow et al., 1995; Beaver and Engel, 1996; Kang and Sivaramakrishnan, 1995; Beneish, 1997; Beaver and McNichols, 1998; Kasznik, 1999; Phillips et al., 2003; Kothari et al., 2005; Alhadab et al., 2013; Kothari et al., 2016; Owens et al., 2017). Only Roychowdhury (2006) determines specifically that real earrings management is another tool adopted by managers, and several subsequent studies provide empirical evidence regarding the real earnings management tool (Baber et al., 1991; Dechow and Sloan, 1991; Bushee, 1998; Bens et al., 2003; Roychowdhury, 2006; Oswald and Zarowin, 2007; Cohen et al., 2008; Osma and Young, 2009; Gunny, 2010; Cohen and Zarowin, 2010; Badertscher, 2011; Zang, 2012; Alhadab et al., 2013; Cheng et al., 2016; Tabassum et al., 2015; Cupertino et al., 2015; Kothari et al., 2016). Furthermore, these definitions fail to indicate that classification shifting is also another tool that is widely used by managers, according to the current literature (Ronen and Sadan, 1975; Barnea et al., 1976; McVay, 2006; Athanasakou et al., 2009; Barua et al., 2010; Fan et al., 2010; Haw et al., 2011; Shirato and Nagata, 2012; Alfonso et al., 2015; Zalata and Roberts, 2015; Noh et al., 2017; Zalata and Roberts, 2017; Malikov et al., 2018). Therefore, it is important that when defining earnings management, the researcher needs to provide a comprehensive definition to overcome these existing limitations.

The researcher in this thesis defines earnings management as:

> *"The process of misrepresenting financial reporting through managing accruals, specific operational activities or even reclassifying some items within financial reporting. Whether managers use the opportunistic approach or the informative approach to present a favourable image about their performance, the action itself is not acceptable to end users as it always misleads them."*

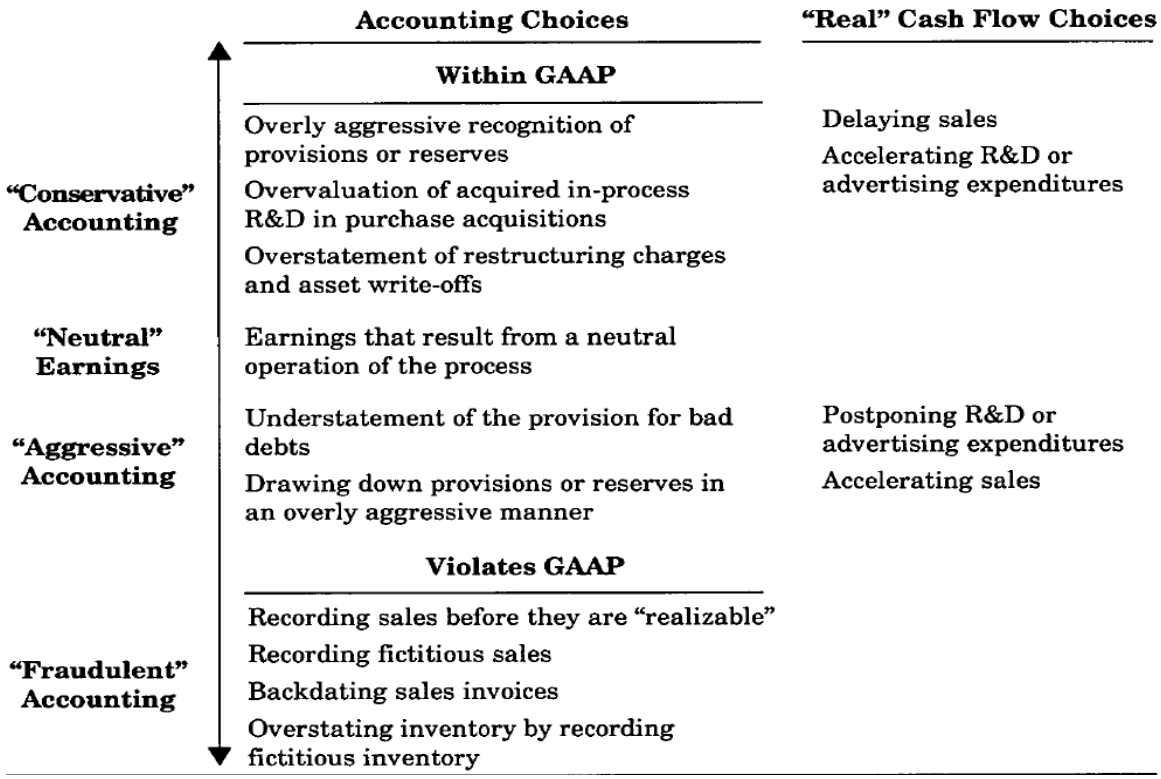
2.2.1 Business ethics and earnings management

It is essential to adhere to a code of ethics in the business environment. This section outlines the debate in the literature on the impact of business ethics on the earnings management phenomenon. It is essential to understand whether earnings management is ethical behaviour or not. To decide whether earnings management is ethical, it is necessary to consider whether it is judged to be acceptable or unacceptable behaviour (Merchant and Rockness, 1994). Compliance with applicable rules and regulations does not guarantee that financial statements are presented fairly and without any misstatements (Shah, 1996). The issue of earnings management remains debatable. For instance, Merchant and Rockness (1994) conduct a questionnaire with senior financial employees and internal auditors to examine the acceptability of earnings management practices. They find that ethical perceptions are affected by intentions, the period of effect, materiality, and the type of action taken, whereas the direction of effect in terms of increasing or decreasing earnings, that is consistent with the GAAP, does not affect the ethical perceptions of these participants. In other words, the participants consider an increase or decrease in earnings within the GAAP to be ethically acceptable.

Pierce (2007) states that many scholars mention the 'slippery slope' when there is an ethical ambiguity in regards to earnings management. He reveals that this occurs when firms (or individuals) fail to identify ethical issues or future ethical issues in a specific situation. It could be assumed that there are no ethical consequences, but then over the time the issue becomes more serious than was expected. Firms then have two choices: whether to admit an error or continue with the action taken. Karcher (1996) argues that to avoid the problem of 'slippery slope', it is the responsibility of managers, regulators,

professionals and educators to increase ethical sensitivity in individuals. Dechow and Skinner (2000) reveal that earnings management is ethical as it falls within GAAP boundaries, and they provide some differences between earnings management and financial fraud. Figure 2-1 illustrates the distinction between these two approaches.

Figure 2-1: The distinction between earnings management and financial fraud



Source: Adapted from Dechow and Skinner (2000, p. 239)

Figure 2-1 shows that even the aggressive accounting that is used by managers may be considered normal earnings management as it is within the GAAP guidelines, while violation of GAAP leads directly to fraudulent accounting. Yaping (2005) also supports Dechow and Skinner's (2000) conclusion, as he documents that earnings management involves using deliberate steps through exercising discretion or applying restructuring activities that are allowed by accounting standards and regulations, whereas earnings fraud involves managing earnings in such a way as to lead to violating standards and corporate laws. However, according to the Statement on Auditing Standards (No. 99), fraud is defined as "an intentional act that results in a material misstatement in financial statements that are subject of an audit".

Moreover, Rubin (2007, p.4) states that fraud can be defined as "an intentional act to gain an unfair or unlawful advantage or gain". Thus, financial reporting fraud is an illegal act which is carried out to steal or misuse the resources of an organization or to conceal true business transactions (Kassem, 2012). Wells (2009) identifies four circumstances that should be fulfilled to recognise financial fraud: a material false statement, intent to deceive, reliance on the false statement and finally causing damage to the business. Thus, based on these definitions, it can be claimed that earnings management is not financial fraud as fraud is illegal behaviour. In spite of the fact that earnings management falls within the boundaries of accounting standards, however, it leads to the provision of inaccurate information that misleads users in making judgements about an entity's performance. Jiraporn et al. (2009) indicate that corporate scandals have caused people to be cautious and recognise that managers' intentions are to gain private benefits rather than maximise shareholders' benefits. In contrast, some scholars argue that earnings management is an ethical practice because it enhances the value of information for users (Subramanyam, 1996; Watts et al., 1986).

Overall, it can be stated that earnings management is not financial fraud; however, it can lead to fraud if it violates GAAP guidelines, according to Dechow and Skinner (2000). It is also essential to understand the main motives and incentives behind managers' actions and whether their acts are accidental or deliberate (Higson, 2003). In addition, managers may not adhere to ethical codes and may view unethical behaviour to be ethical. In other words, utilising earnings management could be ethical from the viewpoint of managers as long as they do not breach legal requirements. However, others view earnings management practices to be unethical and responsible for major accounting scandals. Therefore, there is a huge debate in earnings management literature about this issue. Imposing strict rules and regulations could impede managerial actions.

2.2.2 Incentives to earnings management

Earnings management has inspired a large body of academic research, the empirical evidence revealing that managers manage reported earnings in response to various motives (Black et al., 1998). The following sections provide some discussion on the incentives that lead managers to engage in managing reported earnings.

2.2.2.1 Executive compensation

Jensen and Meckling (1976) reveal that, to mitigate the conflict between managers and shareholders, the principals need to provide the agent with incentives to keep them focused more on maximising shareholders' wealth rather than satisfying their own interests. The most common compensations provided to managers are bonuses and stock-options plans. These are usually linked to financial accounting targets. In some cases, management bonuses are based on sales generated, and managers may focus their efforts on boosting earnings to obtain these bonuses (Lewellen, 1981). Healy (1985) documents that compensation packages drive managers to manage earnings. It causes managers to manage earnings upwards if there is an indication of expected bonus payments. On the other hand, if the chances of bonuses are less good, managers tend to lower earnings for the current period to create a reserve in order to get bonuses in future periods.

Cheng and Warfield (2005) conduct a study to investigate the relationship between stock-based compensation and stock ownership. They find that equity incentives lead to managed earnings. Thus, they reveal that earnings are managed if there is an expectation that stock prices will increase in the short term because the aim is to increase share values before shares are sold. Furthermore, Bergstresser and Philippon (2006) find that CEOs use discretionary accruals manipulation if their compensation is linked to share prices and share options. They also document that executives attempt to exercise large volumes of share options to sell shares during years of high accruals.

However, the literature also includes CFOs' equity incentives (Jiang et al., 2010; Feng et al., 2011). Due to the direct involvement of CFOs in the process of financial reporting, CFOs' equity incentives are found to engage more in earnings management than CEOs' equity incentives. Hence, the disclosure of CFOs' compensation packages is important for both investors and analysts to evaluate the quality of financial reporting (Jiang et al., 2010). In contrast, Feng et al. (2011) claim that CFOs face high pressure from CEOs, which encourages them to be involved in material accounting manipulations. They suggest that CFOs work as watchdogs for CEOs, and found that CEOs of manipulating firms have more equity incentives and power than CEOs of non-manipulating firms. Therefore, executives, in general, have high motivations to manage earnings in order to gain compensation benefits.

2.2.2.2 Debt contracts

According to the positive accounting theory, firms manage earnings upwards to avoid any debt-covenant violations, and it is used as a way to relax debt constraints[3] (Watts et al., 1986). Often, creditors impose debt covenants in the debt contracts to monitor and reduce any attempt by firm management to use methods that are not in the best interests of creditors (Garleanu and Zwiebel, 2009). Sweeney (1994) claims that the reason why managers are encouraged to manage earnings is not only related to the flexibility of accounting, but also to the default costs that are imposed by lenders if debt contracts are not met. Sweeney (1994) also finds that earnings are managed upwards more for default firms compared with non-default firms. Consistent evidence was also provided by Defond and Jiambalvo (1994), who reveal positive abnormal accruals one year before debt-covenant violations, while no evidence was found in the year of the violation. Healy and Palepu (1990) returned inconsistent results, and they document no evidence that earnings management is used before debt-covenant violations.

Other studies focus their investigation on the relationship between debt-covenant violations and earnings management for distressed firms facing financial difficulties, and have returned mixed results (DeAngelo et al., 1994;

[3] Because there is a debt agreement between the lender and the borrower. The lender adds some covenants to the debt contract to avoid any breaching of contract from the borrower's side. The borrower may try to manage earnings to avoid the violation of these covenants.

Jaggi and Lee, 2002). For example, DeAngelo et al. (1994) claim that distressed firms are less likely to increase earnings during difficult periods to avoid debt-covenant violations. They suggest that these types of firms prefer to lower reported earnings to get the benefits of renegotiations from creditors for future debt contracts.

In contrast, Jaggi and Lee (2002) find that distressed firms use income-increasing discretionary accruals when they expect that waiver requests will be granted for debt-covenant violations. However, they use income-decreasing discretionary accruals when their requests are denied. Jaggi and Lee suggest that managing earnings upwards or downwards relies on the severity of financial difficulties and the waiver requests granted by creditors. Hence, if firms suffer from temporary financial distress, managers attempt to increase discretionary accruals to improve reported earnings in the eyes of their creditors and to convince them that the financial difficulty is not severe. However, if the problem of finance is severe, then managers expect that they need either to renegotiate debt covenants with creditors or find alternative sources of finance.

Iatridis and Kadorinis (2009) find empirical evidence that UK firms which suffer from low profitability and high leverage rates are more likely to manage earnings. Thus, firms that experienced debt-covenant violation in previous periods may face some constraints when applying for new loans, because creditors would only agree to provide short maturity loans with higher interest rates (Nini et al., 2012). Jha (2013) documents that reported earnings are managed upwards in the quarters preceding a debt violation, whereas managers use decreasing earnings in the quarter of the violation. They suggest that managers of severely distressed firms are more likely to manage earnings in pre-violation periods.

2.2.2.3 Earnings benchmarks

Managers are often motivated to meet earnings benchmarks when there is any fall outside the threshold. Thus, they do not want to bear any future consequences of not meeting earnings benchmarks. Previous studies provide evidence that the ultimate goals of earnings benchmarks are to avoid reporting losses, decrease earnings or even to meet analyst forecasts. This is evident in

the research by Burgstahler and Dichev (1997) when they document that managers use accounting accruals to avoid reporting losses and earnings decreases. Only small firms reported small losses and most firms reported increases in earnings. Similarly, Roychowdhury (2006) reports that managers are engaged in earnings management to meet earnings benchmarks that are used to avoid reporting losses and to meet analyst forecasts.

Osma and Young (2009) examine the relationship between two types of benchmarks, positive earnings and earnings growth, and focus on how they affect research and development expenses (R&D). They find that firms face pressure if they fail to report positive earnings and earnings growth. Managers in this case attempt to cut expenses that are related to R&D. Also, Gunny (2010) reveals evidence that there is a positive relationship between firms that use real earnings manipulation to meet earnings benchmarks. Another study conducted by Chapman and Steenburgh (2011) find significant evidence that managers are involved in earnings management to meet or beat benchmarks. They find that all marketing promotions take place at the end of the fiscal year and the revenue increase by 5% in the current period.

2.2.2.4 Timing of equity offerings

Firms are concerned about their sources of finance, and the two main sources of finance available to companies are debt and equity. However, the focus here is on equity finance. Equity offerings require firms to sell their shares to the public. Investors are willing to buy these shares if they expect that these shares are undervalued and can be sold at a higher price. The existing research shows that firms tend to manage their earnings to report higher earnings around the time of equity offerings. For instance, Kasznik (1999) shows that earnings are managed through accrual earnings before an equity offering in order to convince investors of a good opportunity to invest. However, it has also been documented that earnings drop after new issues, and this has a negative effect on stock performance following equity offerings (Teoh et al., 1998).

Rangan (1998) finds significant evidence of discretionary accruals during the quarter of the offering announcement and in the following quarter. Rangan suggests that two reasons could explain this result: either earnings are managed in both quarters, or firms manage the timing of their offerings after

quarters of high earnings. Shivakumar (2000) documents that managing earnings before equity offerings is not aimed at misleading investors, but the issuers boost earnings to the level that is expected by the market. However, Baker and Wurgler (2002) claim that firms use the proper timing of equity issues to improve their financial performance when equity is significantly overvalued.

Marquardt et al. (2005) document that, during seasoned equity offerings (SEO), firms prefer to manage earnings through accelerating revenues, and these firms reported high accounts receivables. A recent study by Shu and Chiang (2014) suggests that small and large firms use different approaches to place their seasoned shares. Small firms use a time-market approach to offer the shares to the public, whereas large firms use discretionary accruals to increase their returns. They find that timing is positively related to the short-term announcement effect and negatively related to long-term wealth. They further document that discretionary accruals are positively related to short-term wealth and negatively related to long-term wealth. Large firms gain more reputation than small firms do in the market. That is, for larger firms, earnings may be more stable, but they still reveal that large firms have more chance of managing earnings through equity offerings.

2.2.2.5 Meeting or beating analyst expectations

There is a growing body of literature supporting the idea that managers use different tools to meet or beat analyst forecasts (e.g. McVay, 2006; Lin et al., 2006; Bhojraj et al., 2009; Athanasakou et al., 2009: Fan et al., 2010; Barua et al., 2010; Athanasakou et al., 2011; Haw et al., 2011; Shirato and Nagata, 2012; Doyle et al., 2013; Fan and Liu, 2017). These studies provide clear evidence on how managers target analyst forecasts in several international contexts. Managers are motivated to hit analyst forecasts because they are concerned with market reactions to their stock prices, especially if there is a discrepancy between reported earnings and analyst forecasts. Investors might view firms that miss either meeting or beating analyst forecasts as being managed poorly. Managers recognise that the market rewards firms that meet or beat analyst expectations and penalises those that fail to do so (e.g. Bartov et al., 2002; Lopez and Rees, 2002; Skinner and Sloan, 2002; Ke et al., 2003).

Furthermore, Zang (2012) reveals that firms that engage in earnings management to meet or just beat analyst forecast consensuses tend to have more analyst coverage, higher growth and better earnings performance compared with others. Rickling et al. (2013) find that firms that meet or beat analyst expectations repeatedly are considered less risky not only by investors but also by auditors. Therefore, low fees are charged by auditors to these firms. This target has thus become one of the key motives for managers to employ managerial tools.

To sum up, managers might have various incentives to manage reported earnings. However, the earlier discussion provides the main motives, as summarised in the previous literature. The following sections explain the different types of earnings management highlighted from previous studies. The subsequent sections review the literature on the fourth tool, which is the managerial guidance tool.

2.2.3 Types of earnings management

Earnings management can be categorised into three tools, accrual earnings management, real earnings management (also called real activities manipulation) and classification shifting. Although a majority of previous studies focused on the first category of earnings management, the current trend in the literature has shifted to the last two tools of earnings management. Managers shift from one tool of earnings management to another depending on the constraints, costs and timing of each tool (Abernathy et al., 2014). The following sections demonstrate these tools in more detail.

2.2.3.1 Accrual earnings management tool

A large number of studies of earnings management have focused on managing accruals. The concept of accrual, according to the Generally Accepted Accounting Principles (GAAP), is that the effects of business transactions for an entity need to be recorded when revenues (expenses) have been earned (incurred), but not when cash is received or expense is paid. Thus, accruals accounting does not reflect actual cash flow during a particular period (Jung and Kwon, 1988).

In addition, accrual earnings management is subjective because management uses its judgment to estimate the effects of future occurrences of accruals. Hence, this subjectivity opens the door for managers to manage earnings (Brealey et al., 2011). Managers often use this advantage to manage annual reports specifically in relation to the accrual figures. There are many examples of these discretions, such as estimating economically useful lives for fixed assets, deferred taxes, depreciation methods and inventory valuation methods (Healy and Wahlen, 1999). In general, previous research on accrual earnings management is based on three different methods: aggregate accruals, specific accruals and the distribution of earnings. The following sections provide a discussion of these tools in more detail.

2.2.3.1.1 Aggregate accrual earnings management

The extensive literature on earnings management largely focuses on aggregate accrual earnings. In this tool, it is expected that the appropriate method to examine earnings management is to emphasise total accruals. This tool helps researchers to explain managers' discretion in regards to earnings. Essentially, total accruals represent both discretionary accruals and non-discretionary accruals. Thus, discretionary accruals are based on management estimations and assumptions, whereas non-discretionary accruals relate to a firm's performance and its economic activities, over which managers have no direct control (Jones, 1991). Thus, it is less costly for a manager to change accruals than to change accounting policies, because neither of these accruals are directly observed by regulatory authorities or external auditors (Healy, 1985). A variety of studies in the accounting literature examine aggregate accrual earnings (Healy, 1985; DeAngelo, 1986; Jones, 1991; Petroni, 1992; Dechow et al., 1995; Beaver and Engel, 1996; Kang and Sivaramakrishnan, 1995; Beneish, 1997; Beaver and McNichols, 1998; Kasznik, 1999; Phillips et al., 2003; Kothari et al., 2005; Alhadab et al., 2013; Kothari et al., 2016; Owens et al., 2017), in which significant evidence is documented of managers being involved in aggregate earnings management.

Investigation of the aggregate accruals approaches first appeared in the literature in a study by Healy (1985), who uses total accruals to examine management discretion on earnings. Healy argues that compensation packages are one of the main reasons for managing earnings. He reveals a strong

relationship between accruals and income increases, and suggests that managers shift between earnings increases and earnings decreases to obtain bonuses either in the current period or a future period. The concept of aggregate accrual earnings was developed by Jones (1991), and her approach was relied on by many subsequent studies. Jones's study was aimed at testing the relationship between import reliefs and earnings management in a US market. Jones found empirical evidence that managers intend to decrease income during import-relief periods in order to exploit the advantage of import relief.

A further study by Dechow et al. (1995) supports the earlier study, suggesting that managers use discretionary accruals to manage earnings. Kasznik (1999) reveals that positive discretionary accruals are significant in the forecasting year. However, Kasznik claims that managers are pressured by external users, as there is the possibility of future legal cases that may arise from investors and the loss of their reputations due to the inaccuracy of their forecasts. Peasnell et al. (2000a) find that, following the Cadbury report, managing earnings through accruals has been constrained due to an increase in the proportion of non-executive directors in the UK. However, no evidence was found previous to the Cadbury report, and this has contributed to an increase in the quality of financial reporting. Kothari et al. (2005) introduced a performance-matching approach to control for the effect of a firm's extreme performance.

All in all, it is difficult to identify all accruals that cause earnings management, and the major challenge that scholars face is to separate total accruals into discretionary and non-discretionary bases. Furthermore, using the aggregate accrual method may not identify specifically the accruals that cause earnings management and whether the increase in discretionary accruals is due to revenues or expenses components (Stubben, 2010). In addition, it is claimed that relying only on aggregate accrual earnings may underestimate earnings' long-term growth, which causes inferences of earnings management to be misled (McNichols, 2000). Furthermore, Owens et al. (2017) argue that firms in the same industry could face idiosyncratic shocks and this affects the specification of accruals models. This leads to reducing the goodness of fit of these models and affects the measurement of abnormality for the rest of the sample in the same industry. Thus, it is recommended to use other tools, such

as the distribution of earnings and the specific accruals tools, to provide additional evidence about earnings management behaviour.

2.2.3.1.2 Specific accrual earnings management

In the specific accrual tool, investigators limit their studies to examining specific accruals and attempt to identify a particular accrual to determine whether this specific accrual is being used to manage earnings. McNichols (2000) argues that, through investigating specific accruals, more evidence is likely to be obtained. There are several prior studies (Petroni, 1992; Beaver and Engel, 1996; Beneish, 1997; Beaver and McNichols, 1998; Phillips et al., 2003) that examine specific accruals, such as bad debt provisions, deferred tax valuation allowance, loan loss reserves and revenues. For example, Petroni (1992) reveals that firms with weak financial performance in the insurance industry attempt to estimate lower claim loss reserve than strong insurance firms. Beaver and Engel (1996) find evidence that the capital market recognises that the allowance of loan losses has two components, discretionary and non-discretionary. However, the market prices discretionary accruals differently than it prices the non-discretionary element. A study by Phillips et al. (2003) claims that managers may exploit the discretion under GAAP through managing deferred tax expenses. They find that deferred tax expenses are useful in detecting earnings management to avoid earnings decline and reporting losses. Likewise, deferred tax expense is a more accurate measure than total accrual measures, but the accrual measures are more significant in detecting earnings management (Phillips et al., 2003).

Stubben (2010) argues that, in some cases, it is difficult to detect specific accruals, and he introduces three criteria to capture the specific accrual. The first two conditions are that specific accruals must be common across industries and that the accruals could be subject to discretion. The final criterion is that the specific accrual must represent a large portion of the earnings discretion to the firm. However, one limitation of this method is that it requires the researcher to identify the specific accrual that leads to managed earnings, and even if it is identified, the effect may not be statistically significant (McNichols and Wilson, 1988). In this case, a researcher might not be able to detect earnings management by using specific accrual earnings. Therefore, scholars developed another tool, the earnings distribution tool.

2.2.3.1.3 Distribution of earnings around zero method

This tool is an alternative method of examining the discretion of management over earnings, and was introduced by Burgstahler and Dichev (1997). The objective of this approach is to monitor the behaviour of earnings over different sets of intervals to examine whether earnings are managed in order to achieve specific targets. It is important to assess earnings management through focusing on the frequency of earnings that are not caused by non-discretionary accruals (Burgstahler and Dichev, 1997). A large amount of empirical evidence supports the effectiveness of this tool, especially research reporting evidence of positive earnings achieved at a specific interval (Degeorge et al., 1999; Beatty et al., 2002; Dichev and Skinner, 2002; Leuz et al., 2003; Roychowdhury, 2006; Myers et al., 2007: Li, 2014; Burgstahler and Chuk, 2015; Burgstahler and Chuk, 2017). These studies focus on the statistical properties of earnings in order to determine the behaviour of earnings around a specified benchmark. According to the distribution approach, earnings are determined above or below the benchmarks. Burgstahler and Dichev (1997) find that earnings can be manipulated upwards through changes in working capital and cash flow from operations. They also reveal that the frequency is low for firms that suffer from small earnings decreases and small earnings losses, whereas it is high for firms that increase earnings. It shows that managers intend to avoid reporting earnings decreases and losses in order to reduce transaction costs.

Degeorge et al. (1999) use this tool and document empirical evidence that earnings are managed to report positive earnings, ensure sustainable firm performance and meet analyst forecasts. They find that firms that merely meet thresholds suffer from a poor future performance. Myers et al. (2007), meanwhile, focus their study on earnings per share (EPS) and document evidence that managers intend to provide sustainable increases in EPS even more than expected in order to manage earnings. Another study using this tool was conducted by Beatty et al. (2002), who find that public banks are more involved in earnings increases in discretionary loan loss provisions and realised security gains and losses than are private banks. It is likely that it is used to avoid reporting small decreases in earnings. Burgstahler and Chuk (2015) find less evidence that firms with financial difficulties were involved in discontinuities in earnings distributions using price per share proxy. Gilliam et al. (2015) document weak evidence for earnings discontinuities after the

Sarbanes-Oxley Act (SOX) in 2002. This might suggest that strict rules and regulations after the passing of SOX contribute to this behaviour. Although this method is also popular among scholars, relying on this method alone might provide incomplete conclusions about earnings management. This method provides only an indication for suspect firms, but it does not guarantee that these firms are involved in earnings management. Therefore, this tool must be used in parallel with the other tools, explained earlier, in order to detect earnings management practice comprehensively.

2.2.3.2 Real earnings management tool

Much of the previous literature on earnings management pays attention to accrual earnings management. However, Roychowdhury (2006) documents that managing earnings is not limited to accounting accruals, but can also be achieved through operational activities. Real earnings management takes various forms, such as reducing R&D expenditure, offering unusual sales discounts, selling fixed assets in a particular period and managing discretionary expenses. The most popular study related to real earnings management was conducted by Graham et al. (2005), who distributed a survey to 400 financial executives. It was shown that eighty per cent of CFOs reported that they were engaged directly in real earnings management through reducing R&D costs, and cutting advertising and maintenance expenses. Further, around fifty-five per cent of them agreed that this manipulation was used to delay new projects. Graham et al. (2005) argue that the market punishes firms that do not meet their targets and leads managers to sacrifice economic value in order to achieve their targets.

However, most of the prior studies on real earnings management have focused on research and development expenditure (Baber et al., 1991; Dechow and Sloan, 1991; Bushee, 1998; Bens et al., 2003; Oswald and Zarowin, 2007; Osma and Young, 2009; Cheng et al., 2016). For example, Baber et al.'s (1991) was one of the first to examine real earnings management R&D expenses. They find that R&D expenses are lowered for firms that report earnings close to negative figures. The study is considered a fundamental study, and much subsequent research has relied on it to investigate real activities manipulation. A similar study was carried out by Dechow and Sloan

(1991), who report that CEOs manage research and development expenditure for their final year of office. It was noted that CEOs spend less on R&D expenses to improve short-term performance. On the other hand, Grinyer et al. (1998) distribute a survey to 246 financial directors for big UK firms, and find that directors believe that firms are valued by the market according to their current earnings. They also document that R&D expenses are managed if earnings are expected to fall. In the same vein, Demirag (1998) conduct a survey of 226 UK directors and reported a relationship between the last year's reported earnings and the size of budgets allocated for R&D expenditure, claiming that many UK directors in large firms employ short-termism in determining R&D budgets.

Bushee (1998) examines the relationship between institutional ownership and earnings management through R&D expenses. Cross-sectional data were used to test R&D intensity. Bushee shows that there is a negative association between large institutional ownership and earnings management. The study demonstrates that institutional investors monitor management roles; that is, the involvement of large institutions may lead to reduced earnings management. As argued by Bens et al. (2003), managers are concerned with earnings per share (EPS) dilution that results from exercising stock options provided to employees. They find evidence that managers intend to decrease R&D costs to repurchase exercised stock options.[4] Osma (2008) investigates the effect of independent boards on R&D expenses between 1989 and 2002 using UK firms. He claims that it depends on the efficiency of the boards and on whether they have sufficient expertise regarding the firm and the industry, in which case they may be able to detect any opportunistic cut in R&D expenses resulting from short-term pressures. However, if boards are friendly with the management, it is unlikely that earnings management will be detected. Furthermore, using the UK context, Osma and Young (2009) report evidence that managers attempt to reduce the expenses allocated for R&D in order to meet earnings benchmarks. A similar conclusion was drawn by Cheng et al. (2016), suggesting that R&D expenses are managed to achieve specific targets.

[4] They are also called share options in some countries. These are types of incentives that are awarded to the management, in which they have the right to buy or sell shares at specific price on a specific date.

Another real earnings activity is the sale of fixed assets, and it is used to avoid reporting negative earnings (Bartov, 1993). Black et al. (1998) conduct a study to examine the relationship between earnings management and the timing of asset sales in three countries, the UK, New Zealand and Australia, in which assets can be revalued. They document significant evidence that financial reporting standards have a direct influence on earnings management practice. They reveal that firms in the UK and New Zealand revalue their assets, but it does not appear that this is used to smooth earnings. Likewise, Herrmann et al. (2003) investigated whether Japanese firms use the sale of fixed assets and marketable securities to manage earnings. They document a negative association between sales of fixed assets and management-forecast error. Thus, when reported earnings are lower than the management forecast, it is more likely that management will increase earnings through sales of fixed assets and marketable securities.

Other relevant studies also provide empirical evidence on real earnings management (Cohen et al., 2008; Cohen and Zarowin, 2010; Gunny, 2010; Badertscher, 2011; Zang, 2012; Alhadab et al., 2013; Tabassum et al., 2015; Cupertino et al., 2015; Kothari et al., 2016). Managers might manage real activity through discretionary expenses, and these expenses are normally reported during the same period as they are incurred, but these expenses are not essential expenses for the operation of the business. These expenses may include R&D, selling, general and advertising expenses. Discretionary costs are, by nature, important, and may lead to enhancing business activities, but they do not necessarily affect the ongoing concern of the business. Thus, these expenses may be managed to increase reported earnings.

Roychowdhury (2006) examine abnormal discretionary expenses between 1978 and 2001 and supports the argument that managers reduce discretionary expenses to meet earnings targets and analyst forecasts. Gunny (2010) investigates the relationship between real earnings management and some discretionary expenses such as research and development expenses (R&D), and selling, general and administration expenses (SG&A). Gunny also reports evidence that both discretionary R&D costs and SG&A costs are reduced to manage expenses. He also finds that fixed assets are sold to report gains as a means of increasing reported earnings, while prices are discounted to either increase sales or create overproduction to reduce the costs of goods sold.

Thus, increasing sales leads to improved cash flows from operating, while reducing cost of goods sold allows managers to manage production costs (e.g. Abad et al., 2016; Eiler et al., 2016; Kothari et al., 2016). To sum up, the research on real earnings management has been extended in recent years. It is a new trend for managers to employ this tool compared to accrual earnings management. However, managers might also engage in classification shifting as a substitute tool to manage reported earnings.

2.2.3.3 Classification shifting tool

The flexibility of accounting rules offers managers the advantages of using their estimates and choices to determine how to report and reclassify some items in financial statements. However, these choices could affect the presentation and disclosure of accounting information in the financial statements. This opportunistic practice adopted by managers allows them to avoid the attention of auditors, but in the end, it influences users' decision making (Haw et al., 2011). The classification shifting tool is basically misclassification of core expenses, which includes the cost of goods sold and general and administrative expenses, into non-core items. This practice is deliberately used to inflate core earnings, but it does not affect the bottom line of reported earnings (Haw et al., 2011).

There are two basic studies that were conducted at an earlier stage in the area of classification shifting, Ronen and Sadan (1975) and Barnea et al. (1976). These studies provided evidence that extraordinary items are one of the core elements used by managers to smooth earnings. McVay (2006) claims that managers may reclassify expenses or revenue to manage earnings and that, although this tool does not violate GAAP, it shows a good image that is not an accurate picture of the firm's actual performance. This is because classification shifting does not require a change in the final reported earnings, but it does involve shifting items to present a misleading image of firm performance. However, there is an increased demand for researchers to focus their investigations on the classification shifting tool (Ronen and Sadan, 1975; Barnea et al., 1976; McVay, 2006; Athanasakou et al., 2009; Barua et al., 2010; Fan et al., 2010; Haw et al., 2011; Shirato and Nagata, 2012; Behn et al., 2013;

Lail et al., 2014; Alfonso et al., 2015; Zalata and Roberts, 2015; Baik et al., 2016; Noh et al., 2017; Zalata and Roberts, 2017; Malikov et al., 2018).

Managers employ this tool as a substitute for other tools (e.g. accrual earnings management and real earnings management). Alfonso et al. (2015) argue that the classification shifting tool has some advantages over accruals earnings and real earnings management. For example, classification shifting is more difficult for external auditors to detect. Accrual earnings management, meanwhile, affects future earnings negatively, whereas shifting operating expenses to non-recurring expenses does not affect the bottom line of income. Also, classification shifting is less costly for managers than both accruals earnings and real earnings management. Again, with real earnings management, managers may postpone some real activities to increase reported earnings, but it is at the expense of future benefits. Hence, classification shifting is a type of manipulation that has the lowest cost compared to other tools (Alfonso et al., 2015). Abernathy et al. (2014) obtained similar results and report that managers use the classification shifting tool when they face certain constraints. They document that managers use it instead of accrual earnings if there is less flexibility in the accounting system. However, managers avoid using real earnings management and use this tool if there are some constraints related to poor financial conditions, a low industry share price or a high level of institutional ownership.

Barua et al. (2010) focus their study on examining classification shifting from operating expenses to discontinued operations. This is because discontinued operations are not fully disclosed in financial statements. They report evidence that this type of manipulation is used to increase core earnings. Consistent with the above study, Fan et al. (2010) conclude that it is more likely that managers will use classification during the fourth quarter than in the interim quarters. Moreover, Haw et al. (2011) claim that classification shifting affects the credibility of financial reporting as investors are misled. They argue that even though investors are fooled by this approach, they can recognise this behaviour over the following year and firms generate negative future abnormal returns. Further, Alfonso et al. (2015) find that the market over-prices the core earnings reported by firms that use income classification shifting. They also support the previous evidence that shifters suffer from negative future returns compared to non-shifters.

Although most of the prior studies were conducted in the US, other examples provide additional evidence that this type of manipulation is commonly used in different countries, such as the UK, Japan and Korea. Athanasakou et al. (2009) reveal no evidence that managers in the UK could use classification in the period before the introduction of International Financial Reporting Standards (IFRS), while Athanasakou et al. (2011) claim that the equity market in the UK does not reward firms that hit analyst targets through use of the classification shifting tool. In contrast, Zalata and Roberts (2015) find that UK firms are motivated to reclassify recurring items into non-recurring to inflate core earnings post-IFRS. However, Zalata and Roberts (2017) suggest that firms in the UK avoid using this tool to hit analyst forecasts because it might be associated with high costs.

Further evidence from the UK is provided by Malikov et al. (2018), who document that firms use this tool to inflate operating revenues. They find an increasing trend for this tool post-IFRS, and they suggest that IFRS provides managers with another opportunity to manage earnings. Shirato and Nagata (2012) also find that Japanese firms intend to shift revenues and expenses to manage earnings. Noh et al. (2017) conduct a study to examine whether Korean firms use classification shifting in the year of IFRS adoption. They find that both income and expenses are used to manage earnings through this tool. They document that it is a general practice for Korean firms to shift certain income to other operating income, whereas in some cases, only special items are shifted in order to improve firm performance.

In brief, the previous sections of this thesis discuss the common types of earnings management. However, several studies shift their attention to examining the trade-off between these types of earnings management in order to understand the reasons behind managers' decisions. Their choices might be related to the costs that are associated with each tool and the timing of managing earnings. The following section summarises the main studies that examine the trade-off between earnings management tools.

2.2.4 Trade-off between earnings management tools

Several recent studies focus their investigations on examining the specific behaviour of managers in shifting from accrual earnings management to real earnings management (Cohen et al., 2008; Cohen and Zarowin, 2010; Gunny, 2010; Badertscher, 2011; Zang, 2012; Alhadab et al. 2013; Kothari et al., 2016). For example, Ewert and Wagenhofer (2005) report that managers intend to shift to real earnings management when standard setters make it difficult for them to use accrual earnings management. They state that tightening accounting standards increases the quality of earnings, but on the other hand, encourages managers to use real earnings manipulation. Similarly, Cohen et al. (2008) investigated both accrual earnings and real activities manipulation before and after the Sarbanes-Oxley Act (SOX) in the US. They examine the effectiveness of the SOX Act and managerial behaviour in managing earnings. In the period before the adoption of SOX, they find an increase in earnings management through accruals and a decrease in real activities manipulation. However, after the passage of SOX, an increase in real earnings management is documented.

Another investigation was carried out by Cohen and Zarowin (2010) to test the trade-off between accrual earnings management and real earnings manipulation around season equity offerings (SEO). They find evidence that firms engage in real activities manipulation pre-SEO, which then declines post-SEO. Gunny (2010) argues that managers are expected to use accrual earnings management after the fiscal year because at that time the earnings management is certain, while real earnings management must be decided before the fiscal year-end. Gunny (2010) documents a positive relationship between firms that use real manipulation and subsequent operational performance. He suggests that real-earnings management may contribute positively to the future performance of these firms. In contrast, Badertscher (2011) finds that firms intend to overvalue their equity because their wealth is tied to the value of the firm's stock price and it is not within GAAP earnings. He also documents that accrual earnings are used in the early stages of overvaluation before they shift to real earnings management. Zang (2012) investigates the trade-off between accrual earnings management and real activities manipulation. He reports two factors that affect managers in making trade-offs between accruals and real

activities manipulations. These factors are the costs associated with each one and the timing of earnings management. Thus, firms intend to use more accruals if they have financial problems or if they are being monitored by institutional investors. In both cases, it is less costly to use accrual earnings management than real earnings management.

Kothari et al. (2016) document evidence that, at the time of SEO, earnings are overstated to maximise SEO proceeds through real earnings management, even though it is more likely to be costly in the long run. They find that firms with positive earnings surprises have low R&D expenses and suffer from negative returns post-SEO. Therefore, these firms intend to overvalue their stocks at the time of the SEO. Alhadab et al. (2013) investigated the association between accrual earnings management and real earnings management. They focused on the initial public offerings' (IPO) failure risk using UK IPO firms. They find that these firms inflate earnings using accrual earnings management and real earnings management during the year of the IPO. Also, it is more likely that these firms have a high level of IPO failure and that this failure occurs during a financial crisis. Thus, IPO firms use more real earnings management at the time of IPO.

However, recent studies have begun to investigate the trade-off between the three types of earnings management. For instance, Fan et al. (2010) claim that managers use classification shifting more during the fourth quarter than in the interim quarters. This is because managers find it difficult to use accruals when there are some constraints and intend to avoid any suspicious behaviour that may attract the attention of auditors. Haw et al. (2011) report that accrual earnings management and classification shifting can both be used as a substitute for managing reported earnings. Another recent study was conducted by Abernathy et al. (2014). They find that managers use classification shifting compared to other earnings management tools when they face certain constraints. They document that classification shifting is used instead of accrual earnings management if there is less flexibility in the accounting system. On the other hand, if there are constraints related to poor financial conditions, a low industry share price and a high level of institutional ownership, firms tend to avoid using real earnings management and prefer to use the classification shifting tool. They reveal that the classification shifting

tool is merely a substitute for both accrual earnings management and real earnings management.

Thus, earnings management is common behaviour for managers, but the question is whether there are any consequences when employing these tools. In respect to the consequences of earnings management, the argument that can be made is that earnings management cannot be free of costs. The cost of earnings management depends on the tool used by managers. For example, aggressive accrual earnings management may attract the attention of auditors and regulators (Graham et al., 2005). However, scholars claim that the most expensive type of earnings management is real earnings management because it has severe effects on future cash flows (Lo, 2008). Graham et al. (2005) document that managers recognise that real earnings manipulation is costly, but they still use it as another way to manage earnings. They reveal that real earnings management can be costly if managers intend to manage equity offerings. Other studies such as Cohen and Zarowin (2010) and Kothari et al. (2016) find consistent results to support Graham et al.'s (2005) findings. Therefore, earnings management can be costly for managers, but managers continue to utilise these tools in order to achieve specific targets. The following section focuses on managerial guidance, which has been widely investigated in the existing literature.

2.3 Managerial Guidance and its Incentives

Firms tend to disclose the projections of their financial results that relate to the upcoming quarter or fiscal year. This practice is subject to debate due to its impact on stock price valuation, liquidity and volatility (Han, 2013). Managerial guidance (management earnings guidance) has become a common behaviour of firms' disclosures, however, whether it is beneficial to release this information to the capital markets has been the focus of significant academic interest (Lee, 2009). Han (2013) claims that there could be an interrelationship between managerial guidance and analyst forecasts. Managers have the ability to time their guidance before the actual reported earnings are announced (Hirst et al., 2008). Previous research shows that analysts tend to revise their estimates once managers release their earnings guidance (Baginski and Hcissell, 1990). Bhojraj et al. (2012) find a positive relationship between

guidance frequency and firm reputation. These firms tend to develop reputations through their guidance. They also document that 34.45% of the sample used guidance ten times or more each year.

There are some important reasons that motivate managers to employ managerial guidance. Several previous studies show that CFOs manage earnings to guide analysts with their forecasts. Thus, CFOs prefer to meet earnings targets to retain their credibility (Graham et al., 2005). Jiang et al. (2010) find a positive relationship between CFOs' equity incentives and earnings management for beating analyst forecasts. They show that CFOs are more involved in earnings management than CEOs. They suggest that CFOs have more roles and powers in financial reporting than CEOs. Degeorge et al. (1999) state that the content of reported earnings is vital for influencing analyst forecasts downwards to achieve the goal of meeting or beating analyst consensus. They document that earnings management is used to hit three targets: reporting positive earnings, meeting analyst forecasts and sustaining firm performance.

Avoiding reporting negative surprises is among the top reasons that managers tend to heavily guide analyst forecasts. Archival research corroborates this suggestion. Managers are concerned with market reactions to their stock prices, especially if there is a discrepancy between reported earnings and analyst forecasts. For instance, Kasznik and McNicholos (2002) report that returns for firms that meet expectations are significant. These firms are found to have higher earnings forecasts than others that miss analyst forecasts. A consistent result was also found by Bartov et al. (2002) and Lopez and Rees (2002), who document that managers recognise that the market rewards firms that meet or beat analyst expectations and penalises those that fail to do so. Matsumoto (2002) argues that guiding analysts' forecasts is not limited to public disclosures that are provided by management but is also achieved through private and informal information. Burgstahler and Eames (2006) report that to achieve zero and small positive earnings surprises, managers use two approaches, inflating earnings and guiding analyst forecasts. Cheng and Warfield (2005) report that for equity incentives, it is more likely that earnings are managed to meet or just beat analyst forecasts.

Brown and Caylor (2005) claim that, managers intend to meet or beat analyst forecasts to avoid reporting negative surprises, reporting losses or reporting earnings decreases. Investors reward firms that meet or beat forecasts by avoiding negative surprises more than they do other firms which meet or beat analyst forecasts using other targets. Investors might view firms that fail to meet or beat analyst forecasts as being managed poorly. They relate this behaviour to increased media coverage, analyst coverage, and the accuracy and precision of analyst forecasts. Zang (2012) reveals that firms that engage in earnings management to meet or just beat analyst-forecast consensuses tend to have more analyst coverage, higher growth and better earnings performance compared with others. Rickling et al. (2013) report a consistent result showing that achieved analyst expectations bring great rewards for managers. They find that firms that meet or beat analyst expectations repeatedly are considered less risky not only by investors but also by auditors. Therefore, lower fees are charged to these firms by auditors.

In 2016 a survey was conducted by the National Investor Relations Institute (NIRI) for firms in 23 industries, and 94% of the respondents indicate that they provide guidance either financial, non-financial or both (NIRI, 2016). This guidance is essential as it expects to reduce the level of information asymmetry and lower the corporate cost of capital. However, the managerial guidance allows managers to engage in myopic behaviour at the expense of the firm's long-term growth (Houston et al., 2010). Lee (2009) finds that managerial guidance leads to a reduction in information asymmetry that relates to moral hazard. He suggests that managers utilise guidance tools to decrease information asymmetry between themselves and investors.

Houston et al. (2010) claim that traditionalists prefer that the practice of guidance be ceased and argue that managers should focus on their business and leave the responsibility of valuing their securities and predicting future performance to investors and analysts. Chen et al. (2011) examine firms that have stopped providing earnings guidance. They find that these firms experienced poor prior performance, operate in an uncertain environment and have fewer informed investors. They also report that these firms showed an increase in analyst forecast dispersion and their forecast accuracy decreased after guidance cessation. Moreover, Houston et al. (2010) document consistent evidence of poor performance with firms that stopped guidance. The reason for

ceasing to provide guidance could be due to the presence of bad information or poor economic conditions for these firms (Dye, 1985; Graham et al., 2005). Therefore, the managerial guidance tool does not directly involve managing reported earnings compared to other tools, however, in this tool managers use their voluntary financial disclosures to allow them to achieve their targets.

2.4 IFRS and Managerial Tools

The previous sections of this chapters provide a literature review of four common managerial tools. However, the international regulatory bodies have focused their attention on developing standards to constrain managerial behaviour to make financial reporting more transparent and reliable. One of the recognised sets of rules in this regard is the International Financial Reporting Standards (IFRS). This section summarises the core arguments regarding the impact of these standards on managerial tools.

Due to the interrelation between economies across countries, the adoption of a common accounting language for financial reporting has become an important issue to harmonise their accounting standards. The IFRS are issued by the International Accounting Standards Board (IASB). Iatridis (2010) claims that there are several benefits to IFRS adoption. These benefits are not limited to harmonising accounting practices across countries, but also lead to providing higher comparability, lower transaction costs and enhancing international investments among adopters. Many countries agreed to adopt the IFRS as they expected that the use of IFRS would lead to increased transparency and would improve financial reporting quality (Jeanjean and Stolowy, 2008). In addition, it has been noted that adoption of IFRS has led to an increase in the liquidity of the capital market and thus reduces the cost of capital for firms (Daske et al., 2008; Li, 2010). Therefore, it is easier for firms in these countries to obtain debt and equity capital (El-Gazzar et al., 1999).

For the European Union, it was compulsory for all listed firms to implement IFRS and the effective date was decided to be on 1 January 2005 (Iatridis, 2010). The aim was to increase financial disclosure, improve governance regimes and enforce standards (Doukakis, 2014). Similarly, as the UK was part of the European Union, it started to adopt IFRS in 2005 for firms that were listed in the main market of the London Stock Exchange.

Nonetheless, the UK had some different characteristics, in that it followed a common law system, and had an active debt and stock markets. Another important feature of the UK market is that investors had strong protection rules, which may be different from some other European Union countries. Despite these differences, UK firms were required to switch from the UK's GAAP to IFRS (Iatridis, 2010).[5]

The effect of IFRS on managerial tools is widely debated among scholars. The first group is in favour of IFRS adoption and claims that IFRS improve accounting quality, and as a result managerial tools are reduced (e.g. Barth et al., 2008; Chen et al., 2010; Iatridis, 2010; Chua et al., 2012; Bouchareb et al., 2014; Boumediene et al., 2014; Navarro-García and Madrid-Guijarro, 2014; Müller, 2014). Barth et al. (2008) report that IFRS adoption contributes to high accounting reporting quality and they document lower earnings management, higher value relevance and timely recognition of losses for firms under the sample that voluntarily adopted IFRS. Hail and Wysocki (2010) argue that the adoption of standards (such as IFRS) could provide discretion, but this discretion in standards is not necessarily bad because it allows managers to convey private information to the market. In the same vein, Navarro-García and Madrid-Guijarro (2014) report significant results using data from Germany that the quality of accounting standards contributes to a reduction in the level of reported negative discretionary accruals. Iatridis (2010) finds that adoption of IFRS in the UK led to reduced earnings management, and documents that these firms tend to report more timely loss recognition and show higher value relevance of financial reports.

In contrast, the second group of researchers argues that IFRS adoption does not improve accounting quality and could increase opportunistic managerial tools (e.g. Daske et al., 2008; Jeanjean and Stolowy, 2008; Ahmed et al., 2013; Daske et al., 2013; Doukakis, 2014; Christensen et al., 2015; Capkun et al., 2016; Zalata and Roberts, 2017; Malikov et al., 2018). Jeanjean and Stolowy (2008) claim that the accounting standards have limited effect on improving the quality of financial reporting. These standards involve some judgment and use of private information. Hence, managers may use substantial discretion even with IFRS adoption. Jeanjean and Stolowy find empirical

[5] Appendix C summarises the main differences between IFRS and the UK's GAAP.

evidence that even after IFRS adoption, standards do not prevent earnings management, and the results show that mandatory adoption of IFRS led to an increase in earnings management in France, but it remained constant in the UK and Australia. Van Tendeloo and Vanstraelen (2005) examine countries where IFRS adoption is voluntary, but they find no relationship between the adoption of IFRS and earnings management. Callao and Jarne (2010) examine the impact of IFRS on discretionary earnings management in European countries. They find significant evidence that discretionary accruals have increased post-IFRS, and the UK is one of the countries in which they have increased the most. They suggest that the reason may be related to fair value measurement and the low level of requirement of financial statement presentation formats in these countries. They reveal that it might be related to the choice to capitalise or expense interest costs on assets, and choice of fair value or costs in valuing property, plant and equipment. Lin et al. (2012) find that switching from the US GAAP to IFRS increased earnings management practice. This opportunistic behaviour reduces accounting quality compares to the US GAAP period.

Doukakis (2014) conducts a study to examine both accrual earnings management and real earnings management for mandatory adoption of IFRS in 22 European countries. He finds no evidence to support the suggestion that IFRS adoption has any effect on either type of earnings management. Ahmed et al. (2013) document evidence that there is an increase in income smoothing for IFRS adopters. They report that after IFRS firms tend to be involved in aggressive reporting of accruals. They conclude that despite prior studies suggesting that IFRS adoption may lead to increased accounting quality, their findings are inconsistent, in regards to whether the quality is reduced for IFRS adopters. In summary, these standards have limited power to constrain managerial incentives. Therefore, compliance with applicable rules and regulations does not guarantee that financial statements are presented fairly and without any misstatements (Shah, 1996). That is, the issue of earnings management is still a debatable one.

2.5 Chapter Summary

This chapter provides a review of the literature on the tools that managers employ to mislead stakeholders. There are four main tools that are documented widely in the existing literature. These are accrual earnings management, real earnings management, classification shifting and managerial guidance. Managers manage accruals because the effects of business transactions for an entity need to be recorded when revenues (expenses) are earned (incurred) but not when cash (expense) is received (paid). Thus, accruals accounting does not reflect actual cash flow during a particular period (Jung and Kwon, 1988). Accrual earnings management is subjective because management uses judgment to estimate the effects of future occurrences of accruals. This subjectivity opens the door for managers to manage earnings (Brealey et al., 2011).

However, managing earnings is not limited to accounting accruals, but can also be achieved through restructuring a business's operational activities (Roychowdhury, 2006). Managers intend to shift to real earnings management when standards setters make it difficult for them to use accrual earnings management. Thus, tightening accounting standards increases the quality of earnings, but on the other hand, encourages managers to use real earnings manipulation (Ewert and Wagenhofer, 2005). It has been documented that there are two factors that affect managers in making the trade-off between accrual earnings management and real earnings management. These factors are the costs associated with each one and the timing of earnings management. Firms intend to use more accruals if they have financial problems or if they are being monitored by institutional investors. In both cases, it is less costly to use accrual earnings management than real earnings management (Zang, 2012).

Moreover, the flexibility of accounting rules offers managers the advantages of using their estimates and choices to determine how to report and reclassify some items in financial statements. However, these choices could affect the presentation and disclosure of accounting information in financial statements. This opportunistic practice adopted by managers allows them to avoid the attention of auditors, but in the end, it influences users' decision making (Haw et al., 2011). The research shows that managers use classification shifting compared to other earnings management tools when they face certain

constraints. Classification shifting is used instead of accrual earnings management if there is less flexibility in the accounting system. On the other hand, if there are constraints related to poor financial conditions, a low industry share price and a high level of institutional ownership, firms tend to avoid using real earnings management and prefer to use the classification shifting tool (Abernathy et al., 2014).

The fourth tool that is used by managers is managerial guidance. Firms tend to disclose the projections of their financial results that relate to the upcoming quarter or fiscal year. This practice is subject to debate due to its impact on stock price valuation, liquidity and volatility (Han, 2013). Managerial guidance has become a common behaviour in firms' disclosures; however, whether it is beneficial to release this information to the capital markets has been the focus of significant academic interest (Lee, 2009). The traditionalists would prefer the practice of guidance to be stopped, and argue that managers should focus on their business and leave the responsibility of valuing their securities and predicting future performance to investors and analysts (Houston et al., 2010). The current research has begun to focus on firms that ceased managerial guidance and to examine its impact on firms' performance, analyst forecast dispersion and analyst forecast accuracy (e.g. Houston et al., 2010; Chen et al., 2011).

However, there is an increased body of research examining the impact of IFRS on these tools. It is argued that there are several benefits to IFRS adoption. These benefits are not limited to harmonising accounting practice across countries; they also provide higher comparability, lower transaction costs and enhance international investments among adopters (Iatridis, 2010). The effect of IFRS on managerial tools is debated among scholars. One group of researchers claims that IFRS adoption improves accounting quality, as a result of which use of managerial tools are reduced (e.g. Barth et al., 2008; Chen et al., 2010; Iatridis, 2010; Chua et al., 2012; Bouchareb et al., 2014; Boumediene et al., 2014; Navarro-García and Madrid-Guijarro, 2014; Müller, 2014). In contrast, the second group argues that IFRS adoption does not improve accounting quality and can increase use of opportunistic managerial tools (e.g. Daske et al., 2008; Jeanjean and Stolowy, 2008; Ahmed et al., 2013; Daske et al., 2013; Doukakis, 2014; Christensen et al., 2015; Capkun et al., 2016; Zalata and Roberts, 2017; Malikov et al., 2018). This huge debate had

led to mixed and inconsistent results and has motivated other researchers to investigate this relationship using different international contexts. Thus, the researcher in this thesis is motivated to examine how these international standards (IFRS) influence managerial tools using empirical evidence from the UK. This thesis specifically aims to: (i) investigate tools (e.g. accrual earnings management, real earnings management, classification shifting and managerial guidance) that managers utilise to meet or beat analyst expectations in the UK post-IFRS; (ii) examine analyst reactions to these four managerial tools; (iii) investigate the impact of managerial tools on information asymmetry.

CHAPTER 3: THEORETICAL FRAMEWORK AND RESEARCH PARADIGM

3.1 Introduction

This chapter focuses on the theoretical framework and the research paradigm for this thesis. It starts with the theoretical framework for the study. To formulate the theoretical framework, this thesis is based on several theories: agency theory, signalling theory and prospect theory. Further, it describes the research philosophy, data collection, and reliability and validity of the research study.

3.2 Theoretical Framework

It is essential to develop an appropriate theoretical framework, designed from theories and models. The conceptual framework is constructed from the existing literature. The researcher then formulates a set of hypotheses to be tested empirically (Collis and Hussey, 2010). However, it is difficult to rely on one single theory to formulate the theoretical framework for this thesis. Therefore, the following sections provide a brief description of applicable theories and provide the researcher's argument on the suitability of these theories to this research context.

3.2.1 Agency theory

Earnings management literature does not provide a specific theory that explains earnings management activities. However, agency theory can explain managerial behaviour (Sun and Rath, 2008). Agency theory is an important theory that is used widely in many fields of business literature to explain the relationship between ownership and management. This theory is based on the concept of 'principals' and 'agents', a relationship between shareholders and managers. The agency relationship is defined as "a contract under which one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf which involves delegating some decision making authority to the agent" (Jensen and Meckling 1976, p. 308).

The principal-agent problem occurs between managers and shareholders. Agency theory might perhaps help to resolve two problems of the agency relationship. The first issue is concentrated on the conflict of goals between the principal and the agent, as it is not easy to verify that the management is doing what it is expected to do by the shareholders (Eisenhardt, 1989). The second issue is risk sharing, since both parties have different attitudes and actions in regards to risks (Eisenhardt, 1989). This might create a conflict between managers and shareholders on how to view risk. Managers are expected to release relevant and reliable financial information to guide users in making significant decisions. However, this is often not the case, as managers are motivated to manage earnings because of their compensation contracts (Strobl, 2013). Previous studies provide evidence that managers utilise discretion over reported earnings in order to obtain bonuses (Healy, 1985), avoid any debt-covenant violations (DeAngelo et al., 1994; Jaggi and Lee, 2002; Nini et al., 2012; Jha, 2013), meet earnings benchmarks (Roychowdhury, 2006), choose the proper timing for equity issuance (Kasznik, 1999; Teoh et al., 1998; Shivakumar, 2000; Shu and Chiang, 2014), or to meet or beat analyst forecasts (McVay, 2006; Lin et al., 2006; Athanasakou et al., 2009 Athanasakou et al., 2011; Doyle et al., 2013; Fan and Liu, 2017).

Scott (2009) argues that managing earnings reduces the transparency and reliability of financial statements. Moreover, Davidson et al. (2005) reveal that there is a relationship between earnings management and agency theory. This is because managers tend to release inaccurate reports that do not represent the real performance of the business. This causes shareholders to make inappropriate investment decisions. Scholars have developed several empirical models to identify cases in which managers are involved in suspect behaviour (Healy, 1985; Jones, 1991; Dechow et al., 1995; Matsumoto, 2002; Roychowdhury, 2006; McVay, 2006). These models provide evidence to support agency theory. The existing literature shows that managers are incentivised to hit analyst forecasts (Lin et al., 2006; McVay, 2006; Athanasakou et al., 2009; Athanasakou et al., 2011; Doyle et al., 2013). These managers understand that investors use the accounting information when they value their stocks. That is, to avoid the risk of negative impact on their stock prices, they intentionally practice earnings management (Strobl, 2013). This is because managers are concerned about analyst forecasts and they encourage

analysts to revise their forecasts through financial information. Cotter et al. (2006) claim that when analysts' forecasts are expected to be optimistic, management is more likely to guide analysts.

However, engaging in suspect behaviour leads to the disclosure of poor quality financial information. This, in the end, guides analysts to produce inaccurate earnings forecasts, which leads to an increase in agency problems (Bushman and Smith, 2001). Furthermore, it has been documented that good quality disclosures have a direct impact on improving stock liquidity and reducing analyst forecast dispersion (Healy et al., 1999). Thus, in this thesis, the researcher aims to provide evidence to support agency theory using the UK context. The researcher develops the main hypothesis in regards to whether there is an association between meeting or beating analyst forecasts and managerial tools. The testing of this hypothesis is conducted in chapter 4 using applicable empirical models.

3.2.2 Prospect theory

Prospect theory was developed by Kahneman and Tversky (1979), and is about gains and losses rather than the usefulness of individuals' wealth. It suggests that individuals are not always rational, but they are risk-averse in decision making. They feel more painful because of losses than positive because of gains. In other word, people view the gain itself more positively than the gain and loss together (Zhang and Semmler, 2009). This theory is also used to explain the conflict between principals and agents when the agents have prospect theory preference (Barberis, 2013). Dittmann et al. (2010) claim that the theoretical literature on contracting models considers the principal as risk-neutral and the agent as risk-averse. Moreover, Aaron et al. (2014) reveal that prospect theory might explain why managers are incentivised to manage earnings. They suggest that managers attempt to report earnings above the threshold in order to obtain bonuses. Therefore, according to this theory, managers are motivated to manipulate reported earnings to avoid earnings decreases. That is, managers are risk-averse in decision making. They tend to avoid the pain (consequences) of reporting earnings decreases. Shen and Chih (2005) find evidence to support prospect theory in explaining earnings management using the banking industry. They state that individuals behave as

risk-averse above a particular reference point and risk-seeking below this point. They use a bank's earnings threshold as the reference point, and they provide evidence consistent with prospect theory.

Further, prospect theory can explain analyst forecast behaviour as well. A large body of the existing literature shows that analysts prefer to issue positive reports for their close clients, rather than damaging their relationship with management (Trueman, 1990; Francis and Philbrick, 1993; Richardson et al., 2004). Ding at al. (2004) claim that analysts provide irrational forecasts and that these forecasts are influenced by other factors, which in the end leads to the production of earnings estimates that are different from actual earnings. They document evidence that analysts' forecasts are more accurate during positive earnings growth, while during negative earnings growth they are over-optimistic. Moreover, Amir and Ganzach (1998) find that analysts overreact to positive forecasts and underreact to forecast revision. This empirical evidence supports prospect theory, in which analysts are irrational in their decision making. They are risk-averse, meaning they provide irrational forecasts to avoid future consequences of their current decisions.

Abarbanell and Bernard (1992) argue that there are inefficiencies in analyst forecasts and that professional analysts make regular errors in forecasting earnings. These errors could be related to psychological forces. Further, Löffler (1998) claims that analysts work in a complex environment and face different incentives, which leads the rationality of their expectations to be erratic. Ding et al. (2004) suggest that analysts avoid predicting earnings decline, either because they are unwilling or they are unable to do so. Other studies argue that analysts are irrational because their forecasts do not reflect all the information that they have (Abarbanell and Bernard, 1992; Elgers and Lo, 1994). Therefore, prospect theory could explain how both managers and analysts make irrational decisions to avoid negative consequences of their current decisions. The researcher in this thesis attempts to provide additional evidence to support prospect theory. Thus, the main hypothesis involves testing the relationship between analyst reactions and managerial tools. The testing of this hypothesis is conducted chapter 5 using empirical models that are based on previous literature.

3.2.3 Signalling theory

3.2.3.1 The link between spread and information asymmetry

According to Jensen and Meckling (1976), managers might not act in the best interests of their principals (shareholders), and this creates a conflict between the agents (managers) and the principals (shareholders). Thus, managerial discretion in financial reports is more likely to create an imbalance between the information that managers hold and the information that shareholders receive (Purwanti and Kurniawan, 2013). Akerlof (1970) introduced the concept of 'lemons market' to explain information asymmetry, provided through an example of the marketing of new and used cars. He showed that the new cars could be priced with the used cars in the presence of information asymmetry. Due to the existence of asymmetric information, this creates two types of investors. Informed investors who possess private (inside) information and uninformed investors who rely on public information for their investments (Amiram et al., 2016). Security liquidity is an essential feature that attracts investors when they intend to trade in any security market. These investors are motivated to buy stocks at a low price (the bid price) in an attempt to sell them at a high price (the ask price). The difference between these two prices is defined as the spread, which normally covers three costs: order processing costs, inventory costs and adverse information costs (Gregoriou et al., 2005). Prior studies document certain factors that determine the bid-ask spread, and these factors are market value, trading volume, volatility and disagreement in analyst earnings forecasts (e.g. Dierkens, 1991; Shleifer and Vishny. 1997; Krishnaswami and Subramaniam, 1999b; Schwert, 2002; Ellul et al., 2002; Cai et al., 2004; Chae, 2005; Gregoriou et al., 2005). These are discussed in the following sections.

3.2.3.1.1 Market value

This is the first determinant of the spread; firms with high market value are more likely to be followed by a large number of analysts and their stocks are frequently traded. Greenstein and Sami (1994) claim that shares of larger firms are more frequently traded than those of smaller firms. Thus these firms may provide more public information. They are also followed by more analysts, and for that reason it would be expected that these firms will have lower

information asymmetry in comparison with smaller firms. Chae (2005) supports this finding. Therefore, firms with high market value are expected to have lower spread between the bid price, and this allows a reduction in information asymmetry levels.

3.2.3.1.2 Trading volume

Prior studies have also investigated the relationship between spread and trading volume (e.g. Ellul et al., 2002; Cai et al., 2004). Chae (2005) found that before earnings announcements, trading volume was negatively related to asymmetric information, whereas this relationship tended to be positive after the announcements. Thus, during the post-announcement period uninformed traders tended to perceive adverse selection to be costly for them as a result of this, causing the trading volume to decrease. Gregoriou et al. (2005) found a negative relationship between the spread and trading volume. Other studies also support the suggestion that trading volume influences information asymmetry (e.g. Bartov and Bodnar, 1996; Chae, 2005; Bharath et al., 2009). Levin (2001) claims that a negative or a positive relationship between trading volume and information asymmetry relies on whether private information is in the hands of sellers or buyers. The demand for trading volume is expected to decrease if the sellers have better information, while it increases if the buyers have better information.

3.2.3.1.3 Volatility

Volatility of share prices is the third determinant of the bid-ask spread. Traditionally, environment uncertainty influences stock returns. Thus, if the level of information asymmetry is high, it is difficult to predict stock returns accurately. Zhang (2006) points out that if good information is brought to the market then it is expected that the impact of this information will be positively related to stock returns, whereas bad news has a negative impact on stock returns. In other words, the market may overreact to any positive or negative news in the presence of information asymmetry. It is also argued that information asymmetry sometimes affects share prices positively, while in other cases it has a negative impact on stock prices (Comerton-Forde and Rydge, 2006; Attig et al., 2006). Furthermore, market makers find it difficult to trade with stocks that have a higher level of risk. There are several prior studies

that document a positive relationship between share prices and bid-ask spread (Tinic and West, 1972; Benston and Hagerman, 1974; Stoll, 1978; Copeland and Galai, 1983; Swaminathan, 1991; McInish and Wood, 1992). When share prices are more volatile, investors seek private information to gain profit from trading. Chung et al. (1995) also reveal that the trading profits for firms that have high levels of volatility can be higher with the availability of private information. However, these shares are considered to be more risky as well. Other studies consistently document that high information asymmetry is associated with high stock price volatility (e.g. Dierkens, 1991; Shleifer and Vishny, 1997; Krishnaswami and Subramaniam, 1999b; Schwert, 2002). Therefore, risk associated with a security leads to an increase in the level of spread (Karpoff, 1986). In addition to this, an increased risk of a security leads to an increase of informed traders and this reflects on the spread between the bid and ask (Kim and Verrecchia, 1994).

3.2.3.1.4 Analyst forecast disagreement

Prior studies also show that there is a relationship between analyst forecasts and the bid-ask spread, and document that the spread is positively related to analyst forecast dispersion (e.g. Gregoriou et al., 2005; Kanagaretnam et al., 2005). Analysts often incorporate some important information for investors that is used to make investment decisions (Chung at al., 1995). Brown and Han (1992) claim that analysts may be able to influence information asymmetry if they predict future firm performance more accurately. However, Kanagaretnam et al. (2005) suggest that when there is high divergence of beliefs among investors about firms' earnings, this creates high trading volume in the market and causes dispersion in earnings forecasts to be high. In the same vein, Gregoriou et al. (2005) included disagreement in analyst earnings forecasts as another factor that influences the spread. They reveal that it is important to measure market makers with respect to informed traders. Market makers cause the spread to increase as a result of their response to additional risk. Brown and Han (1992) document that when there is a consensus among analysts about future firm performance, information asymmetry tends to reduce. Foo (2013) supports this and claims that both high stock turnover and higher analyst following lead to a reduction in information asymmetry. Therefore, analyst forecasts influence the spread and affect information asymmetry levels.

3.2.2.2 Information asymmetry and managerial tools

Information asymmetry creates two problems: hidden information (adverse selection) and hidden actions (moral hazard). Bolton and Dewatripont (2005) claim that individuals hide private information from others and this creates inefficiency in the market. This is because the agents have informational advantages over the principals. In contrast, a hidden-action problem occurs after a contract is signed. The agents behave in a way that may harm the principals. According to Bolton and Dewatripont (2005), the problem with the moral hazard is that the actions of individuals are not observable, which might cause the principals to take into account both the rationality constraints and incentive constraints for these agents. For instance, managers could take action to manage earnings in the current period at the expense of the future.

However, managers have the choice to disclose or hide private information, and they have incentives to reveal only good information about their performance. Schipper (1989) claims that managers are those who have more private information that relates to the entity than others, but they usually do not reveal this type of information fully to the public. Managers often withhold bad news to avoid an adverse reaction from investors, but good news tends to be leaked to the market (Kothari et al., 2009). In the same vein, Nagar et al. (2003) claim that managers usually avoid revealing private information because these disclosures (or lack thereof) allow them to control their private benefits.

Spence (1973) also explains the information gap in the context of employment. Spence states that an employer purchases a lottery when a new individual is hired, because the wage is offered for the unknown future performance of this individual. Thus, the employer has only personal records about the new applicant. Spence additionally brings the concept of signalling to reduce this gap and indicates that a job seeker invests money in education in order to get sufficient returns in the form of a future wage, and these are considered as signalling costs that compensate applicants for the wage received. The signalling costs are lower for those people who know that they are intelligent and hard working. The lazy and incompetent have to pay a high price for education (in the effort) and therefore do not ‘buy’ the signal. As a

result, the signalling works to inform the employer of the higher quality worker.

Signalling theory is essential to reduce asymmetric information between informed and informed parties (Spence, 2002). In this theory, the first party chooses how to signal the information, and the other party interprets the signal that has been released by the sender (Connelly et al., 2011). Previous research has identified two approaches used by managers to explain earnings management behaviour: the opportunistic perspective and the informative perspective (Beneish, 2001). The first perspective suggests that managers apply managerial tools in order to mislead users (Healy, 1985; DeAngelo et al., 1994; Teoh et al., 1998; Kasznik, 1999; Jaggi and Lee, 2002; Shivakumar, 2000; Roychowdhury, 2006; Nini et al., 2012; Jha, 2013; Shu and Chiang, 2014). The followers of this perspective suggest that earnings management leads to an increase in the information asymmetry. This supports the principal-agent conflict that is suggested by agency theory.

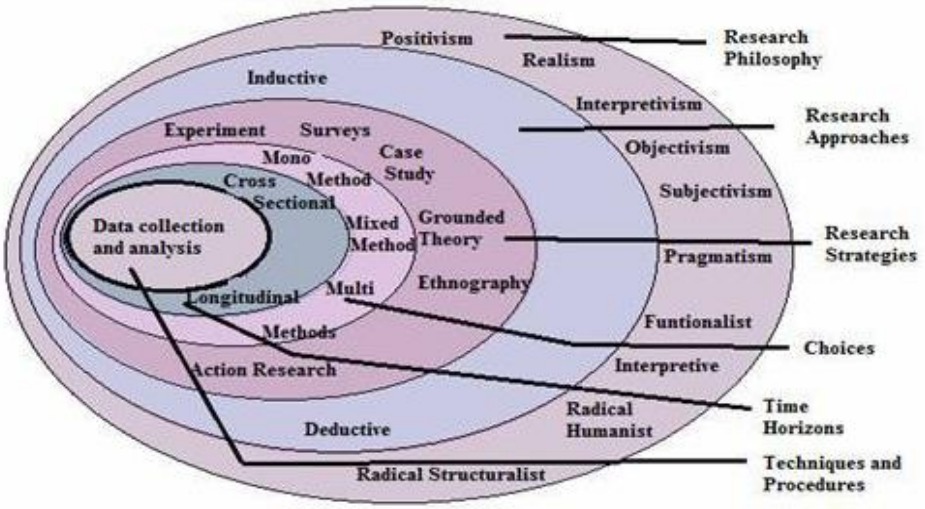
On the other hand, the informative perspective suggests that managers might convey private information that is beneficial for stakeholders (Holthausen, 1990; Watts and Zimmerman, 1990; Healy and Palepu, 1993; Subramanyam, 1996; Fields et al., 2001; Arya et al., 2003; Louis and Robinson, 2005). The adopters of this perspective suggest that earnings management decreases the information asymmetry. Managers might use earnings management as a signal to reduce the information asymmetry, and this is consistent with signalling theory. Wiyadi and Sasongko (2015) argue that the presence of information asymmetry is because of earnings management behaviour. Abosede and Oseni (2011) state that the impact of asymmetric information needs to be measured and tested empirically. Sufi (2007) and Karlan et al. (2009) claim that information asymmetry cannot be observed directly, but that the presence of asymmetric information may cause the market to fail (Zerbe and McCurdy, 1999; Borooah, 2003).

Thus, based on the above discussion the researcher has developed the main hypothesis, which is that there is a relationship between information asymmetry and managerial tools. Scholars have developed empirical models to test this relationship (Richardson, 2000; Francis et al., 2005; Bhattacharya et al., 2013; Cormier et al., 2013; Abad et al., 2016). They have also introduced different proxies (bid-ask spread, analyst coverage, analyst dispersion) to

measure information asymmetry. The researcher in the thesis aims to provide evidence to support information asymmetry concept using the UK context, and to determine whether managerial tools impact positively or negatively on information asymmetry. The testing of this hypothesis is conducted chapter 6 using applicable empirical models.

3.3 Research Philosophy

In social science research, it is important to identify and justify the proper research philosophy adopted by the researcher. The research onion diagram, developed by Saunders et al. (2012), gives an overview of the core elements of research methodology. Figure 3-1 divides research methodology into several layers, research philosophy, research approach, research strategies, time horizon, data collection and data analysis.



Source: Adapted from Saunders et al. (2012, p. 128)

Figure 3-1: The research onion in a research methodology

In general, philosophies in social science are based on certain assumptions, and these assumptions are related to the concepts of ontology, epistemology, human nature and methodology. The assumptions of ontology, epistemology and human nature have a direct impact on the methodology that a researcher follows. Different methodologies have different ontology, epistemology and human-nature assumptions, depending on how the investigator views the nature

of reality and the method of gaining the knowledge about this world. If one treats fact as hard, external and objective, then it is very likely that emphasis will be placed more on analysing the relationships and the regularities between the elements (Burrell and Morgan, 1979).

In this study, the researcher adopted the positivist position as a research philosophy. Following this position, the researcher views the world as an object (ontology), and to discover the world and understand the extent of tools that managers use, facts are obtained from the measurement of identified variables (epistemology) through secondary data. However, it is not right to say that the second approach, positivist, is superior to the first approach, interpretivist; rather it depends on the researcher him/herself to decide the method to be adopted according to the research questions and the objectives that a researcher needs to achieve from the study. In this study, the second method is more suitable to achieving the research objectives.

The choice of research approach depends on the research design. Patton (1990) argues that there is a debate among researchers about quantitative versus qualitative approaches. Some define themselves as quantitative oriented and others as qualitative followers. Quantitative researchers often deal with numerical data to test hypothetical generalisations (Hoepfl, 1997), and also to measure and analyse the causal relationship between variables (Denzin and Lincoln, 2000). Mathematical techniques are then applied to interpret these numerical data and the results are expressed via statistical analysis (Clark, 2005). In this thesis, the researcher uses the quantitative approach to achieve the research objectives, as this study follows the positivist position.

This thesis uses panel data research, which is common in the accounting and finance field, especially if a researcher is interested in analysing complex issues that combine both cross-sectional and time-series data. These studies may be related to countries, individuals, or firms across several years. It is an approach that combines long data (over time) with wide data (over subject). This study covers 280 firms over 11 years. There are some advantages in using panel data compared with time-series or cross-sectional data. Severe multicollinearity and a lower degree of freedom are very common in time-series data, which constrains the ability of researchers to determine the influence of each explanatory variable. This causes a problem in meeting the model information requirements. Through combining cross-sectional data with

time-series data, panel data provides more variability for the sample used in a study, and a high degree of freedom due to a large number of observations. This, in fact, has a key role in reducing the collinearity problem, which may violate one of the ordinary leased square (OLS) assumptions. This is vital in improving the efficiency of the estimators produced by the model (Hsiao, 2007).

3.4 Data collection and data analysis

It is essential to choose and implement well-recognised methods for data collection and data analysis in any research study. A researcher needs to obtain sufficient data to answer research questions and to achieve research objectives. Data collected may include primary data or secondary data. The primary data are data that are raw data and collected for the first time, while the secondary data are those that have already been collected. The initial data can be obtained from surveys, observation, questionnaires or interviews (Kothari, 2004). The secondary data comes in the form of quantitative (numeric) data or qualitative (non-numeric) data. Secondary data has become one of the major sources of data for researchers due to the ease of gaining access to data through the internet or financial databases (Saunders et al., 2012). Secondary data refers to published information, obtained from different sources such as government bodies, technical trade journals, books, magazines, research publications, or statistical and historical documents (Kothari, 2004).

Any researcher who intends to use secondary data is required to check that these data are reliable, suitable and adequate. The first characteristic is related to information about the data collector, sources of data, the methods used to collect data, the timing of collection and the level of its accuracy. The second criteria refer to the suitability of data. If data are unsuitable for the study, then they should not be used. In this regard, the researcher is required to check the primary source, i.e. the initial data collection. The last characteristic is the adequacy of the data, which is concerned with the level of accuracy achieved in the data. If the data are not adequate for the undertaken study, the researcher should not use them; it may be narrow or wider data than what is required and those data are not expected to achieve research objectives (Kothari, 2004).

A researcher may use different statistical tools to analyse collected data. There is various statistical software available for researchers, and the most well-known are SPSS, E-Views and STATA. The software helps the researcher to run the complex regression analysis and provide output reports, which then need to be analysed and interpreted by a researcher. Thus, data analysis involves critical analysis and interpretation of these reports to find out relationships among variables, which are compared to the existing literature.

The researcher in this study examined a set of explanatory variables in relation to measured variables. This thesis is based on secondary data, such as annual reports, stock prices and analyst forecasts. These data are extracted from reliable sources such as Thomson Reuters DataStream and Thomson Reuters I/B/E/S databases. For data analysis, the STATA software was used in this study. It is an integrated statistical analysis package that is used by many researchers. STATA is used to analyse complex regressions along with other complicated functions in econometrics. The full details of data collection and data analysis are presented in subsequent chapters.

3.5 Reliability and Validity of the Research Study

The quality of the research design is vital because all findings obtained by a researcher depend on the research-design methodology. The two core concepts related to the quality of quantitative research are reliability and validity. Reliability is the term given to the way data are collected and processed and how data are analysed, which must be in such a way as to allow the process to be repeated by others. It means that consistent results must be obtained if the same procedures are followed by another researcher. Saunders et al. (2012) state that a researcher needs to provide procedures in full to allow other researchers to repeat the study in order to judge its reliability.

Thus, it is easy to fall into the trap of thinking that repeatability and consistency conditions are enough for research to have a high degree of reliability without validity. Therefore, another important characteristic of good research design is validity. In general, quantitative research has three types of validity criteria: construct validity, internal validity and external validity. Construct validity is focused on whether the research measures what it is expected to measure and whether it focuses on the type of data to be collected

and if the method of data collection fits the hypothesis constructed, whereas the second type of validity is more concerned with the kind of research that examines the causal relationship between variables. It would be unusual if a researcher found that the link is related to other reasons that are not as expected and which do not follow the method of the research design. External validity is concerned with the issue of generalisation and whether the research findings can be relevant to other contexts or settings. The critical concern here is the sample size selected in the study and whether it represents the population in general. Therefore, the researcher should be careful in choosing the sample size (Saunders et al., 2012).

In this thesis the researcher determined the sources of data gathered, the type of variables used and how these variables are measured, which makes it easy for other researchers to repeat the study. This enhances the reliability of this thesis. However, to make the results of this thesis valid, the investigator designed the hypotheses based on the prior literature and used similar empirical models to test the hypotheses. Furthermore, the researcher used an adequate sample size of 280 firms over eleven years in order to represent the general population.

3.6 Chapter Summary

This chapter has described the theoretical framework and the research paradigm for this thesis. It is essential to develop an appropriate theoretical framework, designed from theories and models. This chapter has also presented the theoretical framework for this thesis, which is based on several theories: the agency, signalling and prospect theories. Further, it described the research philosophy, and data collection, and reliability and validity of the research study. The researcher adopted the positivist position as a research philosophy. Following this position, the researcher viewed the world as an object (ontology), and in order to discover the world and understand the extent of tools that managers use to mislead the market stakeholders, facts must be obtained from the measurement of identified variables (epistemology) through secondary data. Thus, this philosophy is more suitable to achieve the research objectives. The next chapter examines the relationship between meeting or beating analyst forecasts and managerial tools.

CHAPTER 4: THE ASSOCIATION BETWEEN MEETING OR BEATING ANALYST EXPECTATIONS AND MANAGERIAL TOOLS

4.1 Introduction

Throughout accounting history, there have been a series of corporate scandals (e.g. Enron, HealthSouth, Tyco, Dot-Com and WorldCom) and these corporate failures affect investors' and regulators' confidence on financial reporting (Koh et al., 2008; Agrawal and Cooper, 2015; Galariotis et al., 2015). Managers were criticised in many incidents for being involved in misleading the market and stakeholders through employing various manipulative tools (Brown and Caylor, 2005). This misreporting caused both investors and regulators to raise lawsuits against top management (Palmrose et al., 2004). According to agency theory, the relationship between managers and shareholders is "a contract under which one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf which involves delegating some decision making authority to the agent" (Jensen and Meckling 1976, p. 308). Managers are expected to release relevant and reliable financial information to guide users in making considerable financial decisions. However, this is not always the case, as managers are motivated to manage earnings because of their compensation contracts (Strobl, 2013). Scott (2009) argues that managing earnings reduces the transparency and reliability of financial statements. Davidson et al. (2005) reveal that managers tend to publish inaccurate reports that do not represent real business activities. This causes shareholders to make inappropriate investment decisions. Thus, engaging in suspect behaviour leads to the disclosure of poor quality of financial information. This, in the end, leads analysts to produce inaccurate earnings forecasts, which leads to an increase in agency problems (Bushman and Smith, 2001).

Moreover, managers often become concerned about analyst earnings' forecasts. Thus, to avoid a negative market reaction, they tend to use different tools in order to meet or beat analyst forecasts. This motive has increased considerably in recent years (Brown and Caylor, 2005). Prior literature examines various tools that managers are more likely to employ to meet or beat analyst forecasts (e.g. McVay, 2006; Lin et al., 2006; Bhojraj et al., 2009;

Athanasakou et al., 2009; Fan et al., 2010; Barua et al., 2010; Athanasakou et al., 2011; Haw et al., 2011; Shirato and Nagata, 2012; Doyle et al., 2013; Fan and Liu, 2017). It has been shown that firms that meet or beat analyst forecasts tend to report better earnings performance compared with others (Zang, 2012). Rickling et al. (2013) find that firms that meet or beat analyst expectations repeatedly are considered less risky by both investors and external auditors. These firms have been offered with low auditing fees.

This study focuses on the period post-IFRS adoption to examine how managers in the UK meet or beat analyst forecasts following IFRS adoption. In spite of considering IFRS and UK GAAP to be similar, there was a substantial effect on financial reporting in UK listed firms following adoption. For example, in 2005 Vodafone showed a net profit of £6.5 billion under IFRS, and a net loss of £6.9 billion under UK GAAP. This was due to the different treatment of the goodwill amortisation between these two sets of standards (De George et al., 2016). One significant difference between UK GAAP and IFRS is related to the treatment and disclosure of non-recurring items. For instance, Zalata and Roberts (2017) claim that UK GAAP provides information on how to treat and disclose non-recurring items, while IFRS does not provide any guidance on this issue. They reveal that there is still debate between the International Accounting Standards Board (IASB) and the Financial Accounting Standards Board (FASB) about this issue. The view of the FASB is that information about unusual (infrequent) events or transactions should be disclosed to make it more understandable for users, while the IASB states that there is no guidance under IFRS on this disclosure. Thus, IASB does not see that there is a need to disclose these events.

Furthermore, the issue on how IFRS adoption affects the tools that managers use to meet or beat analyst forecasts is controversial, as existing studies provide contradicting results. For example, some prior studies (e.g. Matsumoto, 2002; Burgstahler and Eames, 2006; Lin et al., 2006) support the argument that managers use accrual earnings management to meet analyst forecasts using the US context; however, in the UK, both Athanasakou et al. (2009) and Athanasakou et al. (2011) do not provide any evidence that managers could use accrual earnings management to meet or beat analyst expectations pre-IFRS. However, the evidence shows that the quality of accounting standards contributed to a reduction in the level of discretionary

accruals (Navarro-García and Madrid-Guijarro, 2014) and that this probably reduces the chance of utilising this tool post-IFRS.

Moreover, the existing literature provides mixed results on whether the real earnings tool is used to hit analyst forecasts (Lin et al., 2006; Athanasakou et al., 2011; Doyle et al., 2013). Ewert and Wagenhofer (2005) report that managers intend to shift to real manipulations when accounting standards setters make it difficult for managers to use accrual earnings management. They claim that the standards encourage managers to use real earnings manipulation. This does not mean that the IFRS are stronger than local GAAP, but the nature of the IFRS allows managers to exploit accounting choices and estimates through these standards. Jeanjean and Stolowy (2008) found empirical evidence that even after IFRS adoption, standards do not prevent earnings management, and the results show that mandatory adoption of IFRS led to an increase in earnings management in France, but that it remained constant in the UK and Australia. Thus, real earnings management could be one tool that managers are motivated to use to hit analyst forecasts post-IFRS.

Prior research, however, indicates that managers do engage in classification shifting to meet or beat analyst forecasts (McVay, 2006; Lin et al., 2006; Fan et al., 2010; Barua et al., 2010; Athanasakou et al., 2011; Haw et al., 2011; Shirato and Nagata, 2012; Doyle et al., 2013; Fan and Liu, 2017). These studies have provided evidence from local GAAPs in different countries. Recent studies (e.g. Zalata and Roberts, 2017; Malikov et al., 2018) from the UK context show that IFRS adoption allows managers to inflate core earnings using the classification shifting tool, but whether managers use this tool to meet or beat analyst forecasts has not yet been explored. Athanasakou et al. (2011) document that the classification shifting tool is not preferred in the UK market pre-IFRS, as the equity market does not reward firms that hit analyst targets through classification shifting. Therefore, it is less likely that managers will use it to meet analyst forecasts post-IFRS.

In relation to the managerial guidance tool, Athanasakou et al. (2009) and Athanasakou et al. (2011) provide evidence that UK firms used managerial guidance to meet analyst forecasts pre-IFRS. However, the existing research shows that IFRS adoption increases market demand for more disclosures and allows managers to engage in this tool even more (Houston et al., 2010; Li and Yang, 2016). This tool seems to be more convenient for managers post-IFRS

because it does not require them to alter reported earnings, and that minimises criticism of analyst forecasts. Thus, the impact of IFRS implementation on managerial tools to meet analyst forecasts is an interesting research area, especially in regards to the real earnings management and managerial guidance tools.

To focus on the UK context, fewer studies have been conducted in the UK to investigate the tools that UK firms use to hit analyst expectations (e.g. Athanasakou et al., 2009; Athanasakou et al., 2011). Furthermore, prior studies in the UK focus on the pre-IFRS adoption period (UK GAAP). For instance, Athanasakou et al. (2009) find that UK firms only use managerial guidance tools to meet or beat analyst forecasts. Athanasakou et al. (2011) document that UK firms use managerial guidance and classification shifting methods to meet analyst forecasts. The second method is not preferred, as the equity market does not reward firms that hit analyst targets through classification shifting. They suggest that IFRS adoption could increase the scope of managerial guidance and propose that this area of research could be investigated further in the post-IFRS era.[6]

Ahmed et al. (2013) point out that standard setters and regulators are both interested in understanding the effect of IFRS adoption on properties of accounting information in countries that have already adopted these standards and those countries that are considering adopting them. They also indicate that investors and analysts place importance on these sets of rules and how they affect accounting numbers. In general, the effects of IFRS adoption on managerial tools rely on whether these standards have the ability to detect or reduce this managerial behaviour. A strong set of standards would probably reduce managerial discretion over accounting choices or restrict their intentions. In other words, if the IFRS are of higher quality than UK GAAP, then it would be expected that the adoption of IFRS in the UK would lead to improvements in financial reporting and a reduction in such managerial behaviour.

[6] This study focuses on the post-IFRS period, while previous studies in the UK were conducted under UK GAAP. In this regard, the Accounting Standards Board (2003) has highlighted the main differences between the UK GAAP and IFRSs, which are summarised in Appendix C. Horton and Serafeim (2010) mention that the core differences are related to employee benefits, leases, share-based payments, intangible assets, income tax and financial instruments.

On the contrary, if IFRS are of lower quality and allow managers to use their opportunistic managerial tools more easily than UK GAAP, then it would be expected that these standards will reduce the reliability of accounting numbers reported in financial statements. The effect of the IFRS on managerial tools is debated among scholars. Capkun et al. (2016) claim that prior studies provide mixed evidence on whether shifting to IFRS adoption leads to a decrease or increase in earnings management. They reveal that the growing debate on this is due to the flexibility of accounting choices that provide subjective estimates, as well as the lack of clear guidance on the implementation process of these standards. In general, this debate divides scholars into two groups. The first group is in favour of IFRS adoption and claims that the IFRS improve accounting quality, as a result of which managerial tools are reduced (e.g. Barth et al., 2008; Chen et al., 2010; Iatridis, 2010; Chua et al., 2012; Bouchareb et al., 2014; Boumediene et al., 2014; Navarro-García and Madrid-Guijarro, 2014; Müller, 2014). Barth et al. (2008) report that IFRS adoption contributes to providing high accounting reporting quality, and they document lower earnings management, higher value relevance and timely recognition of losses for firms under the sample that voluntarily adopted the IFRS. Hail and Wysocki (2010) argue that the adoption of standards (such as the IFRS) could provide discretion, but this discretion in standards is not necessarily bad because it allows managers to convey private information to the market. In the same vein, Navarro-García and Madrid-Guijarro (2014) report significant results using data from Germany suggesting that the quality of accounting standards contributed to a reduction in the level of reported negative discretionary accruals.

Other studies also support the suggestion that IFRS adoption is essential to improving analyst forecasts (e.g. Hodgdon et al., 2008; Byard et al., 2011; Jiao et al., 2012; Horton et al., 2013). Hodgdon et al. (2008) find a negative relationship between forecast errors and compliance with the disclosure requirements of the IFRS. They claim that IFRS compliance leads to a reduction in information asymmetry and an improvement in analysts' ability to provide more accurate forecasts. Further, Byard et al. (2011) document that absolute forecast errors and forecast dispersion was reduced for mandatory IFRS adopters. However, they suggest that the IFRS improve the analyst information environment only if changes are significant and within strong

enforcement regimes. In the same vein, Cotter et al. (2012) report that analysts forecast errors are reduced due to IFRS adoption, but there is no evidence to support the decrease in forecast dispersion. They suggest that both analysts and firms can manage the transition process. Jiao et al. (2012) show that switching to IFRS for European listed companies leads to an increase in forecast accuracy, and this is consistent with the argument that IFRS adoption improves financial reporting quality. It also improves the abilities of the analyst to forecast earnings after switching. Moreover, Horton et al. (2013) find that consensus forecast errors were reduced post-IFRS adoption. They document that analysts could benefit from both the improvement in the quality of information and increased accounting comparability.

In contrast, the second group of researchers argues that IFRS adoption does not improve accounting quality and could increase use of opportunistic managerial tools (e.g. Daske et al., 2008; Jeanjean and Stolowy, 2008; Ahmed et al., 2013; Daske et al., 2013; Doukakis, 2014; Christensen et al., 2015; Capkun et al., 2016; Zalata and Roberts, 2017; Malikov et al., 2018). Jeanjean and Stolowy (2008) claim that the accounting standards have a limited effect on improving the quality of financial reporting. These standards involve some judgment and use of private information. Hence, managers may use substantial discretion even with IFRS adoption. They find empirical evidence that even after IFRS adoption, standards do not prevent earnings management, and the results show that mandatory adoption of IFRS led to an increase in earnings management in France, but the latter remained constant in the UK and Australia. Lin et al. (2012) provide additional evidence on the effect of IFRS on accounting quality in Germany. They find that switching from the US GAAP to the IFRS increased earnings management practice. This opportunistic behaviour reduced accounting quality compared to the US GAAP period. Doukakis (2014) finds no evidence to suggest that IFRS adoption has any effect on earnings management tools. However, whether IFRS adoption has any shifting impact on managerial tools to meet or beat analyst forecasts in the UK post-IFRS is an empirical question on which there is insufficient evidence in the existing literature. Therefore, this study attempts to address this gap in the current research.

Another motive for conducting this study is that in the existing literature there is a lack of knowledge about the real earnings management tool and whether this tool is used to meet or beat analyst forecasts. The few cases that study real earnings have produced mixed results (Lin et al., 2006; Athanasakou et al., 2011; Doyle et al., 2013). For example, both Lin et al. (2006) and Athanasakou et al. (2011) do not provide any evidence that managers could use real earnings management to hit analyst expectations. On the other hand, Doyle et al. (2013) document that real earnings management is one of the core tools that managers employ to meet or beat analyst forecasts. However, if IFRS adoption improves the quality of financial reporting and restricts managerial behaviour, then it becomes difficult for managers to use accrual earnings management as it could be detected by auditors and regulators. That is, it is probable that managers are expected to shift to the real earnings management tool to meet or beat analyst expectations. In the UK, Athanasakou et al. (2011) find no evidence to suggest that real earnings management can be used to hit analyst forecasts under the UK GAAP. Therefore, whether UK managers attempt to shift to the real earnings management tool post-IFRS is another interesting empirical question.

Moreover, prior research shows that managers might use managerial tools to avoid reporting losses (Burgstahler and Dichev, 1997; Degeorge et al., 1999; Phillips et al., 2003; Brown and Caylor, 2005; Roychowdhury, 2006; Ebaid, 2012; Hamdi and Zarai, 2012; Gilliam et al., 2015; Pududu and Villiers, 2016). However, the existing literature provides limited evidence to support the suggestion that loss-making firms use meeting or beating analyst forecast targets to avoid reporting losses. For instance, using the US evidence, Degeorge et al. (1999) suggest that loss-making firms are less likely to be incentivised to meet or beat analyst forecasts. This is also supported by Matsumoto (2002), suggesting that firms that suffer from consistent prior losses are less likely to use any tools to hit analyst expectations. However, there is little evidence available in regards to how managers in loss-making firms attempt to meet or beat analyst forecasts in the UK post-IFRS.

Under the IFRS, the standards would probably provide more room for managers in loss-making firms to engage in use of these tools. Due to lack of prior evidence, this study further intends to examine whether UK loss-making firms attempt to meet or beat analyst forecasts and to determine the tools that are expected to be employed post-IFRS. This study contributes to the literature in several ways. Firstly, it contributes to the debate among scholars on the impact of IFRS on use of managerial tools. In this study, the results show that both real earnings management and managerial guidance are statistically significant, which indicates that managers in the UK are more likely to use these tools to meet or beat analyst forecasts under the restrictions of international accounting standards. Therefore, it supports prior research that IFRS adoption does not improve accounting quality and could increase use of opportunistic managerial tools (e.g. Daske et al., 2008; Jeanjean and Stolowy, 2008; Ahmed et al., 2013; Daske et al., 2013; Doukakis, 2014; Christensen et al., 2015; Capkun et al., 2016; Zalata and Roberts, 2017; Malikov et al., 2018). That is, managers can use substantial discretion even with IFRS adoption (Jeanjean and Stolowy, 2008; Doukakis, 2014).

Secondly, this study contributes to real earnings management research in the context of meeting or beating analyst expectations. In the existing literature, there is a lack of knowledge about real earnings management. The few cases that study real earnings have mixed results (Lin et al., 2006; Athanasakou et al., 2011; Doyle et al., 2013). The results are consistent with Doyle et al. (2013), who document that real earnings management is one of the core strategies that managers employ to meet or beat analyst forecasts. The results of the current study show a positive and statistically significant association between meeting or beating analyst forecasts and selling, general and administrative expenses.

Thirdly, this study extends the previous research that focuses on managers' incentives to avoid reporting earnings losses (Burgstahler and Dichev, 1997; Degeorge et al., 1999; Phillips et al., 2003; Brown and Caylor, 2005; Roychowdhury, 2006; Ebaid, 2012; Hamdi and Zarai, 2012; Gilliam et al., 2015; Pududu and Villiers, 2016). However, the results of the current study are inconsistent with both Degeorge et al. (1999) and Matsumoto (2002). In this thesis, the researcher documents that loss-making firms are highly motivated to employ real earnings management and managerial guidance in

order to reduce the level of bad reactions to their negative earnings. This study suggests that managers are concerned with the UK market reaction to their reported earnings. Thus, the most suitable tools to employ are real earnings management and managerial guidance, as they are less likely to be detected by regulators and external auditors. The remainder of this chapter is structured as follows: section 4.2 presents a literature review and the research hypotheses. Section 4.3 presents the methodology and sample selection. Sections 4.4 presents the empirical tests and results. The robustness check is presented in section 4.5. Section, 4.6 concludes the study by highlighting the main findings.

4.2 Literature Review and Hypotheses Development

There is a growing body of literature on tools that managers use to meet or beat analyst forecasts. The early-stage literature began to investigate accrual earnings management as the main tool used to meet or beat analyst forecasts. Then, scholars identified other tools such as real earnings management, classification shifting and managerial guidance. Managers are motivated to hit analyst forecasts because they are concerned with market reactions to their stock prices, especially if there is a discrepancy between reported earnings and analyst forecasts. Investors might view firms that miss meeting or beating analyst forecasts as being managed poorly. For instance, Kasznik and McNicholos (2002) report that returns for firms that meet expectations are significant. These firms are found to have higher earnings forecasts than others that miss this target. Managers recognise that the market rewards firms that meet or beat analyst expectations and penalises those that fail to do so (Bartov et al., 2002; Lopez and Rees, 2002; Skinner and Sloan, 2002; Ke et al., 2003; Rickling et al., 2013).

A vast amount of research literature focuses on accrual earnings management (Healy, 1985; DeAngelo, 1986; Jones, 1991; Petroni, 1992; Dechow et al., 1995; Beaver and Engel, 1996; Kang and Sivaramakrishnan, 1995; Beneish, 1997; Beaver and McNichols, 1998; Kasznik, 1999; Phillips et al., 2003; Kothari et al. 2005; Alhadab et al., 2013; Kothari et al., 2016; Owens et al., 2017). The existing literature shows that accrual-based earnings management is used by managers to hit analyst forecasts. For instance, Payne and Robb (2000) report that discretionary accruals are used to achieve analyst expectations and managers utilise this tool when the dispersion in analyst

forecasts is low. Dechow et al. (2000) also support this, finding that these firms perform well in the future with positive abnormal returns. Matsumoto (2002) examines the incentive of avoiding negative earnings surprises for meeting or exceeding analyst forecasts. He finds a positive relationship between managing earnings and abnormal discretionary accruals. Burgstahler and Eames (2006) conclude that managers intend to guide analyst forecasts downwards, but they find that discretionary accruals are managed to hit earnings expectations. Lin et al. (2006) report empirical evidence that discretionary accruals are used to hit analyst expectations. However, in the UK, both Athanasakou et al. (2009) and Athanasakou et al. (2011) do not provide any evidence that managers could use accruals earnings management to meet or beat analyst expectations during the UK GAAP period. Thus, managers are unlikely to use accrual earning management for two reasons: because it is not common in the UK even pre-IFRS, and to avoid detection by auditors or regulators. The researcher predicts that there is a negative relationship between meeting or beating analyst forecasts and use of the accrual earnings management tool; therefore, the following hypothesis was developed:

> *Hypothesis (1): Ceteris paribus, there is a significant negative relationship between meeting or beating analyst forecasts and managing earnings through accrual earnings management.*

In addition to the first tool, Roychowdhury (2006) documents that managing reported earnings is not limited to accounting accruals, but it can also be achieved through operational activities. Real earnings management is widely documented in the literature (Baber et al., 1991; Dechow and Sloan, 1991; Bushee, 1998; Bens et al., 2003; Roychowdhury, 2006; Oswald and Zarowin, 2007; Cohen et al., 2008; Osma and Young, 2009; Gunny, 2010; Cohen and Zarowin, 2010; Badertscher, 2011; Zang, 2012; Alhadab et al., 2013; Tabassum et al., 2015; Cupertino et al., 2015; Cheng et al., 2016; Kothari et al., 2016). Several studies focus their investigations on examining the shift in behaviour from accrual earnings management to real earnings management (Cohen et al., 2008; Cohen and Zarowin, 2010; Gunny, 2010; Badertscher, 2011; Zang, 2012; Alhadab et al. 2013; Kothari et al., 2016). For example, Ewert and Wagenhofer (2005) report that managers intend to shift to real earnings manipulations when standards setters make it difficult for them to use

accrual earnings management. They state that tightening accounting standards increases the quality of earnings, but on the other hand, encourages managers to use real earnings manipulation.

Thus, researchers have started to examine whether managers shift to real earnings management in order to hit analyst forecasts (e.g. Lin et al., 2006; Bhojraj et al., 2009; Athanasakou et al., 2011; Doyle et al., 2013). For example, Lin et al. (2006) find no evidence that real earnings management is used to hit this target. They suggest that this may be related to measurement errors regarding the proxy used for real earnings management. Bhojraj et al. (2009) examine the performance of firms that tend to cut discretionary expenses and those that manage accruals in relation to beating analyst forecast targets. They find that firms with a low quality of earnings, but which tend to beat analyst forecasts, are found to have a greater advantage in share prices over firms that miss forecasts, even though these firms may have a high quality of earnings. However, Athanasakou et al. (2011) find no evidence to suggest that real earnings management was used by UK managers to meet or beat analyst forecasts pre-IFRS. On the other hand, Doyle et al. (2013) investigated the firms that excluded some expenses from GAAP earnings (also called street earnings or operating earnings) in order to meet or beat analysts' expectations. They find that managers tended to use this tool when discretionary accrual earnings are costly. The results show that firms use it to hit analyst forecasts.

As discussed earlier, previous studies of the tools that managers use to meet or beat analyst expectations in the UK are limited and focus on pre-IFRS adoption (UK GAAP). The effects of IFRS adoption on managerial tools rely on the ability of these standards to detect or reduce managerial earnings management behaviour. If the IFRS are expected to be of higher quality than the UK GAAP, then it would be expected that the adoption of IFRS in the UK would lead to improved financial reporting and a reduction in managerial behaviour. The effect of IFRS adoption on the capital markets is seen in countries where there is a large difference between the local GAAP and IFRS, in countries where the legal enforcement regimes and transparent reporting are strong (Daske et al., 2008; Aharony et al., 2010). Kvaal and Nobes (2010) examined whether there are any systematic differences among several countries (Australia, UK, France, Spain and Germany). The documented results show that each country adopted its own version of the IFRS. These

countries tend to maintain the accounting practices that are related to their local GAAP even after the adoption of these standards. This produces inconsistent results regarding the impact of the IFRS on managerial tools.

While there is a lack of prior evidence in support of the suggestion that accrual earnings management and real earnings management were employed in the UK pre-IFRS (UK GAAP), there is evidence for a growing trend of utilising the real earnings management tool post-IFRS. For instance, Ewert and Wagenhofer (2005) report that managers intend to shift to real manipulations when accounting standards setters make it difficult for managers to use accrual earnings management. They state that tightening accounting standards increases the quality of earnings, but, on the other hand, the standards encourage managers to use real earnings manipulation. This does not mean that IFRS is stronger than UK GAAP, but the nature of IFRS allows managers to exploit accounting choices and estimates through these standards. This is supported by Jeanjean and Stolowy (2008), who claim that the accounting standards have a limited effect on improving the quality of financial reporting. These standards involve some judgment and use of private information. Hence, managers may use substantial discretion even with IFRS adoption. Jeanjean and Stolowy find empirical evidence that even after IFRS adoption, standards do not prevent earnings management, and the results show that mandatory adoption of IFRS led to an increase in earnings management in France, but that it remained constant in the UK and Australia. Capkun et al. (2016) claim that due to a lack of clear guidance on the implementation process of IFRS, these standards resulted in greater earnings management; they find no evidence to support the suggestion that managerial incentives have been changed due to this adoption. One of the most recent studies conducted in the UK was by Malikov et al. (2018). They provide evidence that after IFRS adoption firms tend to increase the practice of inflating operating revenue. They suggest that IFRS provides managers with greater scope to manage earnings. Thus, based on the above discussion, managers in the UK might utilise the advantages of accounting choices to manage earnings through real earnings management to meet or beat analyst forecasts post-IFRS. Therefore, managers are expected to increase their probability of meeting or beating analyst through real earnings management.

In this thesis, the researcher expects to find the following hypothetical relationship based on the previous literature and this discussion:

Hypothesis (2): Ceteris paribus, there is a significant positive relationship between meeting or beating analyst forecasts and managing earnings through real earnings management.

Classification shifting is an earnings management tool that is used to misclassify core expenses, which might include the cost of goods sold and general and administrative expenses, into non-core items. This practice is deliberately used to inflate core earnings, but it does not affect the bottom line of reported earnings (Haw et al., 2011). Classification shifting is well documented in the existing literature (Ronen and Sadan, 1975; Barnea et al., 1976; McVay, 2006; Athanasakou et al., 2009; Barua et al., 2010; Fan et al., 2010; Haw et al., 2011; Shirato and Nagata, 2012; Alfonso et al., 2015; Zalata and Roberts, 2015; Noh et al., 2017; Zalata and Roberts, 2017; Malikov et al., 2018). McVay (2006) claims that managers may reclassify expenses or revenue to manage earnings and that, although this tool does not violate GAAP, it shows a picture that is not one of economic reality. This is because classification shifting does not require a change in the final reported earnings, but it does involve shifting items to present a misleading image about firm performance.

Managers employ this tool as a substitute for other tools (e.g. accrual earnings management and real earnings management). Alfonso et al. (2015) argue that the classification shifting tool has some advantages over accruals earnings and real earnings management. For example, classification shifting is less likely to be detected by external auditors. Accrual earnings management, meanwhile, affects future earnings negatively, whereas shifting operating expenses to non-recurring expenses does not affect the bottom line of the income. Also, classification shifting is less costly for managers than both accruals earnings and real earnings management. Again, with real earnings management, managers may postpone some real activities to increase reported earnings, but it is at the expense of future benefits. Hence, classification shifting is a type of manipulation that has the lowest cost compared to other tools (Alfonso et al., 2015). Abernathy et al. (2014) find similar results and report that managers use the classification shifting tool when they face certain

constraints. They document that managers use it instead of accrual earnings if there is less flexibility in the accounting system. Managers avoid using real earnings management and use this tool if there are certain constraints related to poor financial conditions, a low industry share price and a high level of institutional ownership.

Baik et al. (2016) document that post-IFRS firms in financial distress tend to shift their interest payments from operating cash flow to financing cash flow in order to inflate the total figure of operating cash flow. They suggest that managers also use this tool to manage cash flow statements. Prior research indicates that managers engage in classification shifting to meet or beat analyst forecasts (McVay, 2006; Lin et al., 2006; Fan et al., 2010; Barua et al., 2010; Athanasakou et al., 2011; Haw et al., 2011; Shirato and Nagata, 2012; Doyle et al., 2013; Fan and Liu, 2017). However, with respect to the UK context, Athanasakou et al. (2009) reveal no evidence that managers in the UK could use classification pre-IFRS, while Athanasakou et al. (2011) claim that the equity market in the UK does not reward firms that hit analyst targets through classification shifting. Recent studies in the UK focus on the impact of IFRS on classification shifting (e.g. Zalata and Roberts, 2017; Malikov et al., 2018). Zalata and Roberts (2015) find that UK firms are motivated to reclassify recurring items into non-recurring in order to inflate core earnings post-IFRS. Further evidence from the UK provided by Malikov et al. (2018) shows that firms use this tool to inflate operating revenues. They find an increasing trend for this tool post-IFRS, and they suggest that the IFRS provides managers with another tool to manage earnings. Therefore, prior studies suggest that IFRS adoption does not deter managers from using this tool, however, whether IFRS increases or decreases the ability of managers to use classification shifting to meet or beat analyst forecasts remains an empirical question. Based on the recent studies in the UK, IFRS adoption could allow managers to use classification shifting to improve their core earnings.

Thus, it is likely that managers engage in classification shifting to meet or beat analyst forecasts post-IFRS. This discussion leads to the following hypothesis:

> *Hypothesis (3): Ceteris paribus, there is a significant positive relationship between meeting or beating analyst forecasts and managing earnings through the classification shifting tool.*

Managerial guidance has become a common behaviour of firms' disclosures; whether it is beneficial to release this information to the capital markets has been the focus of significant academic interest (Lee, 2009). Han (2013) claims that there could be an interrelationship between managerial guidance and analyst forecasts. Managers have the ability to time their guidance before the actual reported earnings are announced (Hirst et al., 2008). Bhojraj et al. (2012) find a positive relationship between guidance frequency and firm reputation. Firms tend to develop reputations through their guidance. They also document that 34.45% of the sample use guidance ten times or more each year. Prior studies that examine the impact of IFRS adoption on use of the managerial guidance tool provide conflicting arguments and have returned mixed results (Ng et al., 2012; Firth et al., 2013; Li and Yang, 2016; Rhee et al., 2016). For example, Ng et al. (2012) document that managerial guidance is more likely to be employed by managers in countries where the legal system and regulations are strong. They claim that the IFRS are considered principle-based standards compared to rule-based standards. The standards under IFRS might lead to more risk of litigation. Therefore, managers attempt to disclose more voluntary accounting information in order to reduce these risks. Li and Yang (2016) also provide consistent results and document that IFRS adoption increases market demand for more disclosures. This increases managers' incentives to employ the managerial guidance tool.

Alternatively, Rhee et al. (2016) find that managerial guidance is reduced post-IFRS, suggesting that investors understand managerial behaviour and do not consider it useful information to them. Thus, investors do not prefer managers to disclose their earnings forecasts in the form of voluntary information. Moreover, the managerial guidance tool allows managers to engage in myopic behaviour at the expense of the firm's long-term growth (Houston et al., 2010). Houston et al. (2010) claim that traditionalists would prefer the practice of guidance to be ceased, and that managers focus on their business and leave the responsibility of valuing their securities and predicting the future performance of their firms to investors and analysts.

However, Choi et al. (2006) claim that earnings guidance can also be considered a common practice in the UK context. This is supported by Athanasakou et al. (2009) and Athanasakou et al. (2011), who provide evidence that UK firms used managerial guidance to meet analyst forecasts pre-IFRS. However, there is a lack of evidence over the use of this tool to meet or beat analyst expectations post-IFRS specifically. Therefore, if IFRS adoption is a principle-based standard and causes an increase in the demand for managerial earnings disclosures, then it is to be expected that UK firms will continue using this tool to hit analyst expectations. However, if the UK market places less importance on this voluntary information post-IFRS, then it is less likely that managers will use this tool to meet or beat analyst forecasts. Thus, under these conditions, it is difficult to determine the exact direction in regards to whether managers use managerial guidance to meet or beat analyst forecasts post-IFRS. Hence, the following hypothesis is developed:

> *Hypothesis (4): Ceteris paribus, there is a significant relationship between meeting or beating analyst forecasts and use of the managerial guidance tool.*

To extend the investigation on the tools that managers use to meet or beat analyst forecasts, one can also look at loss-making firms to test whether these firms are incentivised to hit analyst forecasts. In general, managers might use managerial tools to avoid reporting losses (e.g. Burgstahler and Dichev, 1997; Degeorge et al., 1999; Phillips et al., 2003; Brown and Caylor, 2005; Roychowdhury, 2006; Ebaid, 2012; Hamdi and Zarai, 2012; Gilliam et al., 2015; Pududu and Villiers, 2016). For instance, Phillips et al. (2003) claim that managers may exploit the discretion under GAAP through managing deferred tax expenses. They find that deferred tax expenses are useful in detecting earnings management to avoid earnings decline and reporting losses. Brown and Caylor (2005) report that firms intend to avoid reporting negative surprises, losses or earnings decreases. They also document that investors reward firms that avoid negative surprises more than any other targets. Moreover, Hamdi and Zarai (2012) find consistent results and report that earnings management is used to avoid reporting losses.

The restriction of rules and regulations motivates managers to use earnings management to avoid reporting losses. Gilliam et al. (2015) document evidence that after the passage of SOX (the Sarbanes-Oxley Act of 2002), managers tend to use this benchmark to avoid losses. However, the existing literature provides limited evidence to suggest that loss-making firms use meeting or beating analyst forecast targets to avoid reporting losses. For instance, Degeorge et al. (1999) suggest that loss-making firms are less likely to be incentivised to meet or beat analyst forecasts. Matsumoto (2002) suggests that firms that suffer from consistent prior losses are less likely to employ any tools to hit analyst expectations. This evidence is related to the US, under the US GAAP. However, there is little evidence available, in particular, on how managers in loss-making firms attempt to meet or beat analyst forecasts in the UK post-IFRS. Under the IFRS, the standards would probably provide more room for managers in loss-making firms to engage in use of these tools. Due to lack of prior evidence, it is difficult to identify the exact tools used and the direction of these tools. Hence, the following hypotheses are formalised:

Hypothesis (5A): Ceteris paribus, there is a significant association between meeting or beating analyst forecasts and accrual earnings management for loss-making firms.

Hypothesis (5B): Ceteris paribus, there is a significant association between meeting or beating analyst forecasts and real earnings management for loss-making firms.

Hypothesis (5C): Ceteris paribus, there is a significant association between meeting or beating analyst forecasts and classification shifting for loss-making firms.

Hypothesis (5D): Ceteris paribus, there is a significant association between meeting or beating analyst forecasts and managerial guidance for loss-making firms.

4.3 Methodology and Sample Selection

4.3.1 Meeting or beating analyst forecast proxy

Earning surprise is calculated as the difference between actual reported EPS and the final analyst forecast made before the announcement date (from I/B/E/S). Therefore, MBE =1, if earnings surprise is expected to be zero or positive value, MBE = 0 otherwise.

4.3.2 Managerial tools measures

There are four primary tools that managers use, and which have been identified in the existing literature. These are accrual earnings management, real earnings management, classification shifting and managerial guidance. The following sections provide details on how these measures are determined.

4.3.2.1 Accrual earnings management measure

One of the most common tools used by managers is the accruals.[7] There is a debate among accounting scholars on whether to use the total accruals or the working capital accruals to calculate the discretionary accruals. The first approach is to use the total accruals, calculated as the difference between the net income before extraordinary items[8], discontinued operations and the operating cash flows reported in the cash flow statements. It is argued that this approach provides an accurate measure of accruals as measurement errors are reduced (Hribar et al., 2002). However, several studies (Teoh et al., 1998b; Roosenboom et al., 2003; DuCharme et al., 2004; Dechow et al., 2012) use the working capital accruals measure, which is calculated as the change in current assets minus net changes in cash minus changes in current liabilities plus changes in short-term debt.

[7] Managers cannot use accruals consistently to meet or beat these forecasts because aggressive accrual-earnings management may attract the attention of auditors and regulators (Graham et al., 2005).

[8] In accounting, an extraordinary item is the term given to expenses that are unusual and material in size. Managers may intend to manage this to report lower earnings. The accounting principles constrain managers' choices to reclassify some items into extraordinary items. They must be valid reasons to treat any item as an extraordinary item.

Jones (1991) introduced a model to detect accrual earnings management. Jones proposed that the total accruals include both discretionary and non-discretionary accruals. The focus is on discretionary, but to control for changes in non-discretionary accruals caused by changing conditions Jones suggests two explanatory variables: change in revenue and gross of property, plant, and equipment. The other variables include controlling the expenses related to the depreciation of non-discretionary accruals. Dechow et al. (1995) evaluate the ability of alternative models to detect earnings management. They evaluate the performance of the specification and the power of accrual models. The specification test is evaluated by Type I error, which arises when the researcher's hypothesis is rejected, when the null hypothesis is true, whereas the power is evaluated through Type II error, which occurs when the researcher's hypothesis is not rejected, when the null hypothesis is false. Dechow et al. (1995) argue that there is a measurement error of discretionary accruals and to resolve this issue they deducted change in receivables from the change in revenue. They found that a modified version of the model developed by Jones (1991) provides the most powerful tests of earnings management. Thus, in this thesis the modified Jones model is used to measure accrual earnings management.

The rational justification for adopting the working capital accruals method instead of total accruals is from the modified Jones model. It is used to control only a limited number of accruals, and using the discretionary working capital accruals can provide a more appropriate proxy than the total accruals (Cotter, 1996; Teoh et al., 1998). It is also argued that firms' managers have greater discretion over current accruals than long-term accruals (Guenther, 1994; Becker et al., 1998). Sloan (1996) documents that the majority of variations in the total accruals are related to the current accruals. That is, firms adjust the current assets and the current liabilities of daily operations, and managers could manipulate these adjustments. It is also argued that working capital accruals are more flexible because of their frequent occurrence, and are involved in a high degree of estimation (Athanasakou et al., 2009).

In this thesis, working capital accruals are used as in Matsumoto (2002), Lin et al. (2006) and Athanasakou et al. (2009). They are estimated using the cross-sectional modified Jones. Peasnell et al. (2000a) document that the cross-sectional modified Jones effectively captures accruals earnings

management. Similarly, Athanasakou et al. (2009) follow the same approach for a similar UK study. Hence, this can be shown as follows:

$$\frac{WCA_{i,t}}{\mathrm{A_{i,t-1}}} = \alpha_1 \left[\frac{1}{\mathrm{A_{i,t-1}}}\right] + \alpha_2 \left[\frac{(\Delta \mathrm{REV_{i,t}} - \Delta \mathrm{REC_{i,t}})}{\mathrm{A_{i,t-1}}}\right] + \alpha_3 \left[\frac{(\mathrm{PPE_{i,t}})}{\mathrm{A_{i,t-1}}}\right] + \alpha_4 ROA_{i,t-1} + \varepsilon_{\mathrm{i,t}} \quad (4.1)$$

Working-capital accruals (WCA_{it}) in year t for firm i, which is calculated as the change in current assets minus net change in cash minus change in current liabilities plus the change in short-term debt, ($WCA_{i,t} = \left(\Delta \mathrm{CA_{i,t}} - \Delta \mathrm{Cash_{i,t}} - \Delta \mathrm{CL_{i,t}} + \Delta \mathrm{STD_{i,t}}\right)$. This method is commonly known as the current accruals method. The change in revenue ($\Delta \mathrm{REV_{i,t}}$) is used to control the economic environment for the firm due to changes in the working capital accounts. The changes in working capital accounts depend on changes in revenue, and managers may accelerate sales to manage earnings. It requires subtracting the change in receivables ($\Delta \mathrm{REC_{it}}$) in year t for firm i from the change in revenues ($\Delta \mathrm{REV_{it}}$) in year t for firm i to get changes in cash sales. This subtraction may constrain the actions of managers to manage earnings through credit revenues. Gross of property, plant and equipment ($\mathrm{PPE_{i,t}}$) are included in the model to control for the portion of the total accruals related to the depreciation expense in non-discretionary accruals where ($\varepsilon_{\mathrm{it}}$) is the error term in year t for firm i.[9] The lagged of return on assets $\left(ROA_{i,t-1}\right)$ is used to control for extreme firm performance following the Kothari et al. (2005) performance matched method. The second stage is to estimate coefficients of $\alpha_1, \alpha_2, \alpha_3$ and α_4 from the above equation, which are used to estimate the normal (expected) working capital accruals ($NWCA_{it}$) for all UK firms in each industry year as follows:

$$\frac{NWCA_{it}}{\mathrm{A_{i,t-1}}} = \widehat{\alpha_1} \left[\frac{1}{\mathrm{A_{i,t-1}}}\right] + \widehat{\alpha_2} \left[\frac{(\Delta \mathrm{REV_{it}} - \Delta \mathrm{REC_{it}})}{\mathrm{A_{i,t-1}}}\right] + \widehat{\alpha_3} \left[\frac{(\mathrm{PPE_{it}})}{\mathrm{A_{i,t-1}}}\right] + \widehat{\alpha_4} ROA_{i,t-1} + \varepsilon_{\mathrm{i,t}} \quad (4.2)$$

The discretionary accruals are measured as the difference between the working capital accruals and the fitted expected working capital accruals, where:

$$AWCA_{it} = \frac{WCA_{i,t}}{\mathrm{A_{i,t-1}}} - \quad NWCA_{i,t} \quad (4.3)$$

[9] Deflating all variables in the regression model by lagged total assets minimises the problem of heteroscedasticity. It is more likely to occur because the researcher uses different sizes of firms and this leads to a huge discrepancy between the largest and the smallest value of the independent variables, and in the Jones case total accruals is calculated using a different sample size.

A positive result suggests that accruals are relatively high, and that may indicate that there has been some management involvement in manging these accounts. It is abnormal compared to the model.

4.3.2.2 Real earnings management measures

Real earnings management is another type of earnings management that a significant body of current research has been attracted to examine since it was introduced by Graham et al. (2005). Real activities manipulation differs from accrual earnings management; rather than involving managers in managing the accruals, they manipulate some activities of the business. Roychowdhury (2006) reports that real earnings management is used to avoid missing analyst forecasts.[10] Doyle et al. (2013) find that managers tend to use real earnings management to hit analyst expectations. In this study, three main real earnings management methods are examined: operating cash flow, production costs, and selling, general and administration expenses. The following sub-sections provide details of each measure.

4.3.2.2.1 Cash flow from operations measure

This measure is used to measure sales-based manipulation. The initial stage is to estimate the expected level of cash flow from operations for all UK firms for each industry and year using the Roychowdhury (2006) model.[11] Since previous studies have documented measurement errors in earnings management proxies related to extreme firm performance (Kothari et al., 2005), the lagged of return on assets is therefore added to the Roychowdhury (2006) model, as follows:[12]

[10] At an earlier stage, scholars started to investigate R&D expenses relative to meeting or beating analyst forecasts (e.g. Perry and Grinaker, 1994; Bange and De Bondt, 1998). The development of a country's accounting standards also leads to shifting from accruals earnings to real earnings management. Ewert and Wagenhofer (2005) report that the tightness of accounting standards encourages managers to use this earning management technique. Similarly, Cohen et al. (2008) find that after the passage of SOX, evidence shows that real earnings management increased.

[11] A deep sales discount is an indication of operational activity deviating from its regularities. As Roychowdhury (2006) and Cohen and Zarowin (2010) report, managers manage sales using price discounts to affect sales volume in the current period as a temporary case; prices will return to their original levels the next time.

[12] Roychowdhury (2006) states that it is common to include a scaled intercept $\beta_1 (1/A_{i,t-1})$ when estimating nondiscretionary accruals, to avoid a spurious correlation between scaled CFO and scales sales due to the variation in the scaling variable of total assets. He also includes an unscaled intercept of α_0 to ensure that the mean of abnormal CFO for every industry per year is zero. Including these intercepts in the

$$\frac{\mathrm{CFO_{i,t}}}{\mathrm{A_{i,t-1}}} = \alpha_0 + \beta_1 \left[\frac{1}{\mathrm{A_{i,t-1}}}\right] + \beta_2 \left[\frac{\mathrm{S_{i,t}}}{\mathrm{A_{i,t-1}}}\right] + \beta_3 \left[\frac{\Delta \mathrm{S_{i,t}}}{\mathrm{A_{i,t-1}}}\right] + \beta_4 ROA_{i,t-1} + \varepsilon_{\mathrm{i,t}} \quad (4.4)$$

The above equation is expressed as a linear function of sales and change in sales in the current period. The dependent variable is the cash flow from operations ($\mathrm{CFO_{i,t}}$) in year t for firm i. The explanatory variables are the net sales ($\mathrm{S_{i,t}}$) in year t for firm i and the change in net sales ($\Delta \mathrm{S_{i,t}}$) in year t for firm i.

The second stage is to estimate coefficients of $\alpha_0, \beta_1, \beta_2, \beta_3 \text{and } \beta_4$ from the above equation, which are used to estimate the normal (expected) level of cash flow from operations for all UK firms in each industry year as follows:

$$NCFO_{i,t} = \hat{\alpha}_0 + \hat{\beta}_1 \left[\frac{1}{\mathrm{A_{i,t-1}}}\right] + \hat{\beta}_2 \left[\frac{\mathrm{S_{i,t}}}{\mathrm{A_{i,t-1}}}\right] + \hat{\beta}_3 \left[\frac{\Delta \mathrm{S_{i,t}}}{\mathrm{A_{i,t-1}}}\right] + \hat{\beta}_4 ROA_{i,t-1} + \varepsilon_{\mathrm{i,t}} \quad (4.5)$$

The above equation (4.5) provides the normal (expected) level of ($\mathrm{CFO_{i,t}}$) and the difference between the actual level of cash flow from operating, and the normal level of ($\mathrm{CFO_{i,t}}$) is used to find out the abnormal level, as follows:

$$ACFO_{it} = \frac{CFO_{i,t}}{\mathrm{A_{i,t-1}}} - \quad NCFO_{i,t} \quad (4.6)$$

Firms could manage CFO through offering deep sales discounts or more lenient credit terms. These practices lead to a reduction in cash inflow during the period of sales as these firms might not get similar offers from their suppliers. Therefore, the negative abnormality of CFO indicates that managers engage in managing earnings through offering deep sales discounts to improve reported earnings.

4.3.2.2.2 Production costs measure

The Roychowdhury (2006) model is applied, which is used to identify the normal (expected) production costs (PROD), expressed as a linear function of sales and change in sales in the current period. Therefore, the normal (expected) level of production costs is expected to be as follows:

$$\frac{\mathrm{PROD_{i.t}}}{\mathrm{A_{i,t-1}}} = \alpha_0 + \beta_1 \left[\frac{1}{\mathrm{A_{i,t-1}}}\right] + \beta_2 \left[\frac{\mathrm{S_{i,t}}}{\mathrm{A_{i,t-1}}}\right] + \beta_3 \left[\frac{\Delta \mathrm{S_{i,t}}}{\mathrm{A_{i,t-1}}}\right] + \beta_4 \left[\frac{\Delta \mathrm{S_{i,t-1}}}{\mathrm{A_{i,t-1}}}\right] + \beta_5 ROA_{i,t-1} + \varepsilon_{\mathrm{i,t}} \quad (4.7)$$

model allows the average ($\mathrm{CFO_{i,t}/A_{i,t-1}}$) for each industry-year to be non-zero even through explanatory variables tend to be zero.

The production costs ($PROD_{i,t}$) is the sum of the cost of goods sold in year t for firm i and the change in inventory from t -1 to t for firm i. ($S_{i,t}$) represents the net sales in year t for firm i, whereas ($\Delta S_{i,t}$) is the change in net sales between the two periods for firm i. However, ($\Delta S_{i,t-1}$) is the change in net sales between periods $t-2\ and\ t-1$ for firm i. To manage earnings upward, managers tend to produce an excessive inventory to report a high level of operating margin, and this causes the fixed cost per unit to decrease as the production volume increases.

The abnormal level of production costs is the estimated residual obtained from the above equation. Then, for every firm-year, the expected production cost is the actual level of production costs minus the expected level of production costs, as follows:

$$APROD_{it} = \frac{PROD_{i,t}}{A_{i,t-1}} - \quad NPROD_{i,t} \qquad (4.8)$$

Similarly, firms reduce production costs through lowering the costs of goods sold, which leads to an increase in the bottom line of earnings. Thus, the result of equation (4.8) is multiplied by -1 so that the higher value suggests that managers reduce these real earnings expenses in order to report higher earnings.

4.3.2.2.3 Selling and general and administration expenses measure

Following Gunny (2010), the below regression model is used to estimate the normal level of selling and general and administration expenses ($SGA_{i,t}$):

$$\frac{SGA_{i,t}}{A_{i,t-1}} = \alpha_0 + \alpha_1 \left[\frac{1}{A_{i,t-1}}\right] + \beta_1 Q_{i,t} + \beta_2 \left[\frac{INT_{i,t}}{A_{i,t-1}}\right] + \beta_3 \left[\frac{\Delta S_{i,t}}{A_{i,t-1}}\right] + \beta_4 \left[\frac{\Delta S_{i,t}}{A_{i,t-1}}\right] * DD + \beta_5 ROA_{i,t-1} + \varepsilon_{i,t} \qquad (4.9)$$

For every year and industry, the explanatory variables in the above model are designed to control factors that influence the level of spending on research and development ($R\&D_{i,t}$). Tobin's Q ($Q_{i,t}$) is a measure used to control for the marginal benefit to marginal cost for an additional unit of new investment. Tobin's Q ratio is calculated as total assets minus book value of equity plus total market value of equity divided by total assets.

The internal funds ($INT_{I,t}$) are used to control for any reduction in the resources available for investment. The dummy control (DD) is included to control for 'sticky' cost behaviour, as identified by Anderson et al. (2003). It indicates that managers attempt to cut resources when sales drop even when this drop is temporary. It is more likely to occur as a result of managers' incentives to meet earnings targets (Kama and Weiss, 2013). The dummy variable is equal to one when total sales decrease between two periods, and zero otherwise. Excluding this dummy variable from this equation leads to ignoring the response of costs to the change in sales, either upward or downward. Similarly, the abnormal level of $(SGA_{i,t})$ is the actual $(SGA_{i,t})$ expenses minus the normal level of $(SGA_{i,t})$ estimated using the above equation, as follows:

$$ASGA_{it} = \frac{SGA_{i,t}}{A_{i,t-1}} - \quad NSGA_{i,t} \qquad (4.10)$$

Managers may reduce SGA expenses to inflate reported earnings. The negative abnormal level indicates that firms engage in earnings management. Thus, the abnormal level of equation (4.10) is multiplied by -1 so that the higher value suggests a higher chance of upward earnings management through lowering SGA expenses.

4.3.2.3 Classification shifting measure

McVay (2006) claims that classification shifting does not require a change in the final reported earnings; instead, it reclassifies some items on financial statements in order to mislead users.[13] To test whether UK firms are involved in classification shifting of core expenses, the method introduced by McVay (2006) was used to measure the expected core earnings level. Unexpected core earnings or abnormal classification shifting ($ACS_{i,t}$) are then calculated as the

[13] Athanasakou et al. (2009) indicate that managers tend to classify core expenses as non-recurring items before the announcement of results and after the accounting period. This strategy is more likely to lead to meeting analyst expectations. Alfonso et al. (2015) argue that classification shifting is more difficult to detect by auditors because it does not require changing the final figure of reported earnings, but is only moving some items in between. Fan et al. (2010) find that managers are more likely to use classification shifting during fourth quarters than in interim quarters. Managers find it is not possible to use accruals when there are certain constraints.

difference between core earnings ($CE_{i,t}$) and expected core earnings ($ECE_{i,t}$) as follows:

$$(ACS_{i,t}) = (CE_{i,t}) - (ECE_{i,t}) \qquad (4.11)$$

Core earnings are estimated with cross-sectional data for each industry year as follows:

$$CE_{i,t} = \alpha_0 + \beta_1 CE_{i,t-1} + \beta_2 ATO_{i,t} + \beta_3 WCA_{i,t-1} + \beta_4 WCA_{i,t} + \beta_5 \Delta SALES_{i,t} + \beta_6 NEG\_\Delta SALES_{i,t} + \varepsilon_{i,t} \qquad (4.12)$$

Core earnings are calculated as I/B/E/S actual earnings per share multiplied by the weighted average number of shares (scaled by total sales as in Athanasakou et al. (2009)). $CE_{i,t-1}$ is the lagged core earnings and is used to control for earnings persistence over time. The assets-turnover ratio ($ATO_{i,t}$) is the sales divided by average net operating assets ($NOA_{i,t}$) where $NOA_{i,t}$ is operating assets minus operating liabilities. It is used to control for the inverse relationship between core earnings and profit margin. Lagged of working capital accruals ($WCA_{i,t-1}$) is also added to control the information content that is related to the previous year's accrual effect, while the current working capital accruals ($WCA_{i,t}$) are used to control for the extreme firm performance because these accruals correlate with the level of accruals.

The change in sales ($\Delta SALES_{i,t}$) is added to the equation to control for sales growth. The last control variable is used to control for sales decline ($NEG\_SALES_{i,t}$). It is the percentage change in sales if the difference in sales is less than zero, and zero otherwise. Then, from the above equation (4.12), the estimated parameters can be used to obtain the expected core earnings. However, a firm is considered to utilise classification shifting if core earnings are higher than expected core earnings.

4.3.2.4 Managerial guidance measure

Several prior studies of losses (e.g. Burgstahler and Dichev, 1997; Degeorge et al., 1999; Phillips et al., 2003; Brown and Caylor, 2005; Roychowdhury, 2006; Ebaid, 2012; Hamdi and Zarai, 2012; Gilliam et al., 2015; Pududu and Villiers, 2016) have found evidence consistent with managers failing to report negative earnings surprises. Skinner and Sloan (2002) document that stock market reactions to negative surprises are substantial, especially for growth stocks, suggesting that these firms are highly concerned with avoiding punishments for

not meeting analyst forecasts, which are associated with high costs. Ke et al. (2003) also support this conclusion, having found an adverse effect on share prices due to the failure to hit analyst expectations.

Matsumoto (2002) claims that managers have two choices, either to utilise earnings management or guide analyst forecasts to avoid negative surprises. Thus, if they use earnings management, then they expect that it will be less costly, or that users are unable to detect earnings management. On the other hand, if managers prefer to guide analysts, then managers believe that earnings' surprises are costly at the earnings announcement. This study uses Matsumoto's (2002) approach, which developed a measure of forecast guidance by modelling an expected forecast based on previous earnings changes and yearly cumulative stock returns. Then, the predicted estimate is compared to the consensus analyst forecast. If the consensus forecast tends to be lower than the model forecast, this indicates that firms have the ability to reduce expectations.[14] This strategy shows how the system is supposed to work with inside information.

Following Matsumoto's (2002) approach and to identify whether analysts downgrade their forecasts, unexpected analyst forecast is calculated as the difference between the last earnings forecast before the release of the earnings announcement (AF0) and the expected earnings forecast ($EF_{i,t}$). Therefore, the unexpected latest analyst forecast is as follows:

$$(UEF_{i,t}) = (AF0) - (EF_{i,t}) \qquad (4.13)$$

The first stage is to estimate the expected earnings forecasts (EF), as follows:

$$EF_{i,t} = EPS_{i,t-1} + E(\Delta EPS_{i,t}) \qquad (4.14)$$

This study follows Matsumoto (2002) and Athanasakou et al. (2009) in estimating the expected change in earnings $E(\Delta EPS_{i,t})$. They model the change as I/B/E/S actual EPS ($\Delta EPS_{i,t}$) scaled by lagged stock price at the end of the year ($P_{i,t-1}$) as follows:

[14] Investors have placed more emphasis on comparing reported earnings and analyst forecasts. Matsumoto (2002) documents that managers intend to guide analyst earnings expectations downward if they believe that analyst forecasts are expected to be overly optimistic. Even though the subsequent studies in the US which relied on Matsumoto's (2002) approach tended to support the suggestion of managerial incentive to guide analyst forecasts, Choi et al. (2006) claim that earnings guidance can also be considered a common practice in the UK context. Indeed, guiding estimates, like other tools used to meet or beat analyst forecasts, bears some costs. This guidance is intended to make analysts revise their initial earnings expectations before they are released.

$$\frac{\Delta EPS_{i,t}}{P_{i,t-1}} = a_{1,t} + a_{2,t}\left(\frac{\Delta EPS_{i,t-1}}{P_{i,t-2}}\right) + a_{3,t}\,CERET_{i,t} + e_{i,t} \qquad (4.15)$$

$CERET$ is the return index for stock price over 12 months for each firm-year and used to capture additional value-relevant information available to analysts. The above equation is estimated per industry year using OLS regression. Hence, the expected change in earnings E(ΔEPS) is shown as follows:

$$E(\Delta EPS_{i,t}) = \left[\hat{a}_{1,t} + \hat{a}_{2,t}\left(\frac{\Delta EPS_{i,t-1}}{P_{i,t-2}}\right) + \hat{a}_{3,t}\,CERET_{i,t}\right] X\ P_{i,t-1} \qquad (4.16)$$

A negative result of UEF suggests that managers are able to guide analyst expectations downward. Therefore, from the above regressions the managerial measures are abnormality for working capital accruals, real earnings activities, classification shifting earnings and unexpected managerial guidance.

4.3.3 Panel logistic regression model

From the above section, the proxy identified by the researcher for the dependent variable of MBE takes values of zero and one. This is referred to as a binary variable and is commonly used by researchers. However, the regressions that are used to deal with binary variables are called the logistic model. There are two types of logistic model: probit and logit. These models are used to overcome the linear probability model through applying a variant of the cumulative logistic function. These models have a common structure, in which the dependent variable takes two values with the Bernoulli distribution (Cameron and Trivedi, 2010). However, both models provided to some extent identical results because they have similar properties, though there is a slight difference in the scale of the coefficients (Studenmund, 2006). One main difference is related to the underlying distribution of the dependent variables. For instance, the assumption under logistic regression is based on underlying qualitative DVs, whereas the probit model assumes that DVs are normally distributed. That is, the distribution assumption makes probit regression to be more restrictive than the logit model (Tabachnick and Fidell, 2007). In this study, the logit model is used to test the relationship between meeting or beating analyst forecasts proxy and managerial measures. Thus, based on the logit model, managerial measures are determined in the form of dummy variables, as in Table 4-1.

Table 4-1: Dummy variables for managerial measures

Measure	Definition
AWCA	Dummy is equal to 1 if abnormal WCA is positive, otherwise 0
ACFO	Dummy is equal to 1 if abnormal CFO is positive, otherwise 0
APROD	Dummy is equal to 1 if abnormal PROD is positive, otherwise 0
ASGA	Dummy is equal to 1 if abnormal SGA is positive, otherwise 0
ACS	Dummy is equal to 1 if abnormal ACS is positive, otherwise 0
UEF	Dummy is equal to 1 if unexpected UEF is negative, otherwise 0

Some researchers use pooled ordinary leased square (OLS), which is based on selecting a random sample from a population at a different point in time. Even though the observations in pooled OLS are independent from each other across years, they are not identically distributed. In other words, the intercepts and slope coefficients are homogenous regardless of group and time period. Chang and Lee (1977) claim that pooled OLS may mislead inference and may not be an effective method due to the problem of heterogeneity. This is because some variables may change across firms, or may change over time as well. In addition, it is stated in the accounting literature that "ignoring such parameter heterogeneity among cross-sectional or time-series units could lead to inconsistent or meaningless estimates of interesting parameters" (Hsiao, 1986, p. 5). The issue concluded above is that there may be a heterogeneity problem in which the estimators obtained from pooled OLS are biased and inconsistent.

However, the data structure for this thesis is panel data, and panel data research is common in the accounting and finance field, especially if a researcher is interested in analysing complex issues that combine both cross-sectional and time-series data (Schulman et al., 1996). There are some advantages in using panel data compared with time-series or cross-sectional data. Severe multicollinearity and a lower degree of freedom are common in time-series data, which constrains the ability of researchers to determine the influence of each explanatory variable. This causes a problem in meeting the model information requirements (Hsiao, 2007). Through combining cross-sectional data with time-series data, panel data provides more variability for the

sample used in a study and a greater degree of freedom due to a large number of observations. It has a crucial role in reducing the collinearity problem, and this assumption is essential in improving the efficiency of the estimators produced by the model (Hsiao, 2007). Also, it is common in some cases for a researcher to omit significant variables that are correlated with independent variables, which in the end affects the model specification. The omitted variables cause the inference to be biased (Hsiao, 2007). However, one significant advantage of panel data studies is the ability to control the effect of omitted variables or unobservable variables. The techniques of panel data allow specific individual variables to take account of the heterogeneity problem, as it is known, in which the omission of variables correlated with explanatory variables causes the coefficients of leased square regression to be biased (Chamberlain, 1978)

Another essential factor is that, in time-series data, the observations of current and lag variables in lag models cause the variables to suffer from collinearity. In contrast, panel data has the advantage of minimising the effect of collinearity between current and lag variables (Griliches and Pakes, 1984). Furthermore, some argue that the typical shape of data is non-stationary and that this affects the assumption of normality distribution, but this is not the case with panel data because panel data study requires a large number of observations over time (Binder et al., 2005). Therefore, this thesis uses the logistic panel model to examine the relationship between meeting or beating analyst proxy and managerial tool measures.

For the panel data, the researcher conducted the Hausman (1978) test to estimate the correlation between individual effects and explanatory variables. This specification test is used to determine whether to use a fixed effect model or a random effect model. The fixed effect model assumes that the invariants are unique to the individuals and should not be correlated with other individual characteristics. That is, the fixed effect model predicts that there is a correlation between entity error term and independent variable (IV). This model removes the effect of those time-invariant characteristics. The random effect model assumes that the variations across an entity are random and uncorrelated with IVs or dependent variables (DVs) in the model. Therefore, firm-specific effects are uncorrelated with the IV, and thus the error term is also not correlated with IVs. There is a trade-off between the fixed effect that provides consistent

estimators and the random effect that provides efficient estimators. However, if the correlation is proven to exist, then fixed-effect estimation must be employed; otherwise, the random effect method is more appropriate. The Hausman statistic as x^2 is computed as follows:

$$H = (\beta_c - \beta_e)'(V_c - V_e)^{-1}(\beta_c - \beta_e)$$

where

β_c is the coefficient vector from the consistent estimator

$\beta_e$is the coefficient vector from the efficient estimator

V_c is the covariance matrix of the consistent estimator

V_e is the covariance matrix of the efficient estimator

Thus, the Hausman test is based on the following hypotheses:

Null hypothesis: *the random effect model is preferred (no correlation)*

Alternate hypothesis: *the fixed effect model is preferred (correlation)*

If the result of the Hausman test shows that the p-value is greater than 5%, it is then not significant and the random effect model (the generalized least squares (GLS)) the most appropriate model to adopt. On the other hand, the fixed effect model is used if the p-value of this test is less than 5%.

Table 4-2: Result of Hausman test for MBE panel logistic model

Regression Model	Parameter	Fixed versus random	Null hypothesis	Appropriateness
MBE	$\chi 2$	1.17		
	p	0.999		
	Hypothesis	Ho: difference in coefficients not systematic	Not rejected	Random effect

The researcher in this thesis checked the appropriateness of the fixed effect and the random effect through applying the Hausman test. The result of the Hausman test for the MBE logistic model is shown in Table 4-2. From the above table, the result indicates that p-value is greater than 5% and this implies that the most appropriate model is the random effect logistic model. It can be

argued that firm-specific effects are uncorrelated with the independent variables. Thus, unobserved variables might not be included in the model and these unobserved variables may occur randomly over the years of the study. These factors could be related to firm characteristics since all firms were pooled together from various industries.

4.3.4 Empirical model

The objective of this section is to identify the empirical model that is used to examine the tools that managers use to hit analyst expectations post-IFRS. Based on the above section, this study uses the random effect logistic model to measure the probabilities of meeting or beating analyst estimates in relation to the abnormality of working capital accrual, real earnings activities, classification shifting and unexpected managerial guidance.[15] This is shown as follows:

$$
\begin{aligned}
&Prob(\mathrm{MBE} = 1/\mathrm{X}) \\
&\quad = \mathrm{F}\,(\,\alpha_0 + \beta_1 \mathrm{AWCA}_{i,t} + \beta_2 \mathrm{ACFO}_{i,t} + \beta_3 \mathrm{APROD}_{i,t} + \beta_4 \mathrm{ASGA}_{i,t} \\
&\quad + \beta_5 \mathrm{ACS}_{i,t} + \beta_6 \mathrm{UEF}_{i,t} + \beta_7 \mathrm{PROF}_{i,t} + \beta_8 \mathrm{P\Delta EARN}_{i,t} + \beta_9 \mathrm{GROWTH}_{i,t} \\
&\quad + \beta_{10} \mathrm{LID}_{i,t} + \beta_{11} \mathrm{INDPROD}_{i,t} + \beta_{12} \mathrm{SIZE}_{i,t} + \beta_{13} \mathrm{INDD}_{i,t} + \upsilon_{i,t} \\
&\quad + \varepsilon_{i,t} \qquad\qquad (4.17)
\end{aligned}
$$

$$
\mathrm{MBE} = \begin{cases} 1 & \text{if Surprise}^{16} \geq 0 \\ 0 & \text{otherwise} \end{cases}
$$

$$
\text{Where } \mathrm{F}\,(\mathrm{B}'\mathrm{X}) = \mathrm{e}^{\mathrm{B}'\mathrm{X}} / \,(1 + \mathrm{e}^{\mathrm{B}'\mathrm{X}})
$$

[15] Several diagnostic tests were performed to test the statistical assumptions of the logistic model. For the Box-Tidwell Test, the interaction terms of continuous variables obtained by this test appear to be insignificant ($p > 0.05$; two-tailed). Thus, the results have passed this test. For the multicollinearity test, variance inflation factor (VIF) and correlation matrix both indicate that no potential collinearity problem could be identified. To account for heteroscedasticity, a robust standard error is included in the regression model. To check the model's performance in terms of the goodness of fit, the Hosmer-Lemeshow test was conducted for the logistic regression model. Based on this test, the p-value shows insignificant results ($p > 0.05$; $\chi 2 = 5.98$), indicating a good fit of the model. Further, using the classification table, the model can predict approximately 66.75%. Please refer to Appendix D for full details for these tests.

[16] The earnings surprises ($Surp.$) is extracted from I/B/E/S and it is the difference between actual reported EPS and the final analyst forecast made before the announcement date.

Degeorge et al. (1999) point out that there are three main earnings benchmarks available for managers: profit, prior-year earnings and analyst forecasts. They claim that managers focus on meeting analyst expectations if both the other targets are met. Brown (2001) documents that profitable firms are most likely to meet or just beat analyst forecasts. Dopuch et al. (2008) also find evidence that firms are motived to meet analyst forecasts if these firms have already met the previous-year earnings, while Graham et al. (2005) report that managers are more likely to be motivated to meet previous-year earnings and then attempt to hit analyst expectations as the second target. Hence, it seems that firms put meeting or beating analyst forecasts as the last target compared with other targets. Similarly, in this study, these targets need to be controlled, therefore, two control variables are added, profit ($PROF_{i,t}$) and positive change in earnings ($P\Delta EARN_{i,t}$). Both are expected to have positive signs.

Dechow et al. (2000) show that firms that meet analyst expectations have special characteristics, with high growth and high market-to-book ratios. McVay (2006) finds that managers with growth firms have strong incentives to hit analyst forecasts. Zang (2012) documents that firms engaged in earnings management to meet or just beat the analyst forecast consensus tend to have more analyst coverage, higher growth and better earnings performance. Athanasakou et al. (2011) find that the pressure of growth firms encourages them to use opportunistic analyst forecast guidance. Hence, to control for a firm's growth opportunities, a growth proxy ($\mathrm{GROWTH}_{i,t}$) is added to minimise this effect. It is calculated as the market value of equity divided by the book value of equity (Skinner and Sloan, 2002; Hribar et al., 2006; Roychowdhury, 2006; Chen et al., 2010; Gunny, 2010). Similarly, the market-to-book value is used to control for firms' growth in this thesis. The growth proxy is expected to have a positive sign.

In some cases, managers are concerned the risk of litigation from shareholders. Managers have more motives to meet or beat analyst expectations when this risk is high. Matsumoto (2002) uses a dummy ($\mathrm{LID}_{i,t}$) to control for high risks in some industries such as biotechnology, computers, electronics and retailing. This proxy was found to provide a better measure of ex-ante litigation risk. It is also expected that the ($LID_{i,t}$) coefficient is positive. To control for the effect of macroeconomic conditions, average

annual growth in industrial production is included, as suggested by Athanasakou et al. (2009). Industry dummies (INDD) are used to control for industry differences which cannot be explained by the control variables.

The size of the firm is an essential indicator of firm performance because larger firms may have better performance and they also have advantages of economies of scale over small firms (Fama and French, 1995; Frank and Goyal, 2003; Jermias, 2008). Zang (2012) uses the value log of total assets to control the size; an indicator of size ($SIZE_{i,t}$) is also used to control firm performance and is calculated as the log of total assets. For this control variable, it is expected to have a negative sign.

4.3.5 Sample selection

The data employed for this study are collected from the FTSE All-Share Index between 2005 and 2015. The main reason for choosing this index is that it captures around 98% of the UK's market capitalisation. The FTSE All-Share is also considered one of the best measures of the London equity market (FTSE factsheet, 2015).[17] Financial data are collected from Thomson Reuters DataStream and Thomson Reuters I/B/E/S databases. Some missing data are gathered manually from companies' annual reports.

The initial sample of firms listed in the FTSE All-Share Index is 651 firms. Financial institutions are excluded from the sample, following Roychowdhury (2006) and Gunny (2010), representing approximately 44.5% of the entire sample. These companies tend to have a different financial-reporting structure compared to non-financial institutions. Also, financial companies tend to have higher leverage ratios, as is usual for these types of businesses, whereas a high leverage ratio for a non-financial company is an indication that the firm is in distress (Fama and French, 1992). This exclusion also includes utility firms as they are highly regulated by accounting rules (Gunny, 2010).

Due to data unavailability for some key variables and the use of a lagged form of some variables, the sample was reduced by 10.4%. However, extreme values (outliers) are not wholly excluded from the sample, as these firms may potentially indicate earnings management. As this study focuses on

[17] FTSE All- Share Indices, FTSE factsheet (2015).

four tools of meeting or beating analyst forecasts, and three of these tools are related to earnings management, it is essential to keep these firms in the sample, and any surprises in the variables may represent some earnings management. However, to deal with extreme values, this study follows prior studies (Gunny, 2010; Dechow et al., 2012; Zang, 2012; Alhadab et al., 2013; Doyle et al., 2013). Extreme observations for all variables are winsorized at 1% and 99% of their distribution. Table 4-3 represents the summary of sample size and the number of firms that meet the above criteria, which represents approximately 43.11% of the total number of firms listed in the FTSE All-Share.

Table 4-3: Sample selection for firms between 2005 and 2015

Description	Number of firms	Percentage
Initial sample (FTSE All-Share)	651	100%
Excluded:		
Financial, insurance and investment companies	(290)	(44.5%)
Utility firms	(13)	(1.99%)
Data unavailability	(68)	(10.4%)
Final sample size	280	43.11%

This study uses annual financial data instead of quarterly data. Annual data is audited and is more reliable and more accessible compared to quarterly data. Also, the prior evidence shows that around 40% of published accounts used discretionary accruals in the fourth quarter (Guthrie and Sokolowsky, 2010). Furthermore, many previous studies in accounting literature used annual accrual data to test earnings management and to investigate the tools used in hitting analyst expectations (Teoh et al., 1998; Bergstresser and Philippon, 2006; Athanasakou et al., 2009; Athanasakou et al., 2011).

In this study, a minimum requirement is set of six observations per industry year, as Athanasakou et al. (2009) suggest, to estimate normal working capital accruals for the UK firms. Similar industries are all integrated into one group to avoid any inefficiency in estimating the regression coefficient. It is also essential to fit the criteria of minimum observations used for each industry. This study follows the Industry Classification Benchmark

(ICB) approach, according to the FTSE Russell classification. There are seven different industries used in this study following the ICB. Table 4-4 summarises the distribution of observations per industry.[18]

Table 4-4: Industrial classification of 280 firms per industry-year between 2005 and 2015

Industry Classification Code (ICB)	No. of Observations	Percentage
2000 Industries	1,245	38.98
3000 Consumer Goods	393	11.99
1000 Basic Materials	277	8.67
0001 Oil & Gas	160	5.01
4000 Health Care	154	4.82
5000 Consumer Services	828	25.92
900 Technology	147	4.60
Total	3,194	100

4.4 Empirical Tests and Results

This section aims to provide practical analysis of whether any of these tools – accrual earnings management, real earnings management, classification shifting earnings and managerial guidance – are utilised to meet or beat analyst forecasts post-IFRS. The main proxies identified are abnormal working capital accruals (AWCA), abnormal operating cash flow (ACFO), abnormal production costs (APROD), abnormal selling, general and administrative expenses (ASGA), abnormal classification shifting (ACS), and unexpected managerial guidance (UEF).

4.4.1 Descriptive statistics

Table 4-5 represents descriptive statistics for the key variables used in this study. The mean ratio for MBE is 57%, which may suggest that more than half of the sample attempts to hit analyst forecasts. This is consistent with the survey conducted in 2016 by the National Investor Relations Institute (NIRI) for a large sample of firms in different industries, in which 94% of the respondents indicated that they provide guidance, either financial, non-

[18] Please refer to Appendix B for the full distribution of sample size per industry.

financial or both (NIRI, 2016). Thus, it is more likely that managers have high incentives to hit targets. Overall, the average size of firms, which is measured by the log of total assets, is approximately £13.6 million. This reflects that the sample selected includes firms with different sizes, which are distributed among seven different industries.

4.4.2 Correlation matrices

Table 4-6 reports a summary of Spearman correlations between the key variables used in this study. This table shows that the meeting or beating analyst forecasts (MBE) proxy is positively correlated with real earnings management through selling, administration and general expenses (SGA). It might indicate that managers intentionally attempt to manage SGA expenses in order to meet or beat analyst expectations. However, both classification shifting, and managerial guidance are positively correlated with managers' motivations to hit analyst forecasts. Table 4-6 shows that the ratios (*0.050, 0.023*) for these two tools are higher than among other tools. This may suggest that managers are more likely to utilise these tools to meet or beat analyst forecasts. This evidence is consistent with the expectations that managers use some tools as substitutes for other tools. However, profitable firms are highly correlated with MBE. This might suggest that these firms have more incentives to hit analyst expectations than loss-making firms. The table also reports that the size of firms is negatively correlated with the explained variable (MBE). Thus, smaller firms have higher incentives to meet or beat forecasts in comparison to larger firms.

Table 4-5: Descriptive statistics for the key variables

Variable	N	Mean	Median	SD	p25	p75
Panel A: Meet or beat proxy						
MBE	2,966	0.568	1.000	0.495	0.000	1.000
Panel B: Managerial measures						
AWCA	2,686	0.572	1.000	0.495	0.000	1.000
ACFO	2,686	0.037	0.000	0.188	0.000	0.000
APROD	2,686	0.021	0.000	0.143	0.000	0.000
ASGA	2,634	0.009	0.000	0.096	0.000	0.000
ACS	2,625	0.962	1.000	0.191	1.000	1.000
ULF	2,406	0.300	0.000	0.458	0.000	1.000
Panel C: Control variables						
PROF	2966	0.959	1.000	0.199	1.000	1.000
PΔEARN	2,986	0.676	1.000	0.468	0.000	1.000
GROWTH	2966	3.125	2.260	6.772	1.350	3.843
SIZE	2966	13.749	13.620	1.690	12.588	14.789
LID	3,194	0.366	0.000	0.482	0.000	1.000
INDPOD	2,966	-0.001	0.009	0.024	-0.012	0.014

This table summarises the descriptive statistics of each variable that is used in MBE model. MBE represents meeting or beating analyst expectations. It is measured as the earnings surprise, which is the difference between I/B/E/S actual EPS and the consensus mean of analyst forecasts before the earnings announcement. MBE takes binary values one and zero. Then, if earnings surprise is expected to be zero or a positive value, MBE = 0 otherwise. The 25% quartile indicates the value of the 25th percentile of the frequency distribution and the 75% quartile is the third quarter of the frequency distribution. For variable descriptions, please refer to Appendix

Table 4-6: Spearman correlation between the key variables for MBE regression model

Variable	MBE	AWCA	ACFO	APROD	ASGA	ACS	UEF	PROF	PCHEARN	GROWTH	SIZE	LID
AWCA	0.0196											
ACFO	-0.0038	0.0083										
APROD	-0.0115	-0.0236	0.0546***									
ASGA	0.0357*	0.0039	0.1757***	0.017								
ACS	0.0502**	0.0766***	0.2953***	0.0923***	0.0707***							
UEF	0.023	-0.0677***	-0.019	-0.015	-0.0517**	0.001						
PROF	0.0923***	0.048**	0.3094***	0.0823*	0.0749***	0.6273***	-0.0484***					
PCHEARN	0.2539***	0.0931*	0.0506**	0.0405**	0.028	0.0603**	-0.6813***	0.1595***				
GROWTH	0.023	0.1073***	0.109***	-0.0357*	0.0663***	0.1097***	-0.1796***	0.1487***	0.1936***			
SIZE	-0.0535***	-0.019	0.0849***	0.041**	-0.0818***	0.0856***	0.017	0.1217***	-0.0344*	-0.0474**		
LID	0.002	-0.1395***	-0.016	-0.031	0.028	-0.0466**	-0.0659***	-0.019	0.019	0.1057***	0.003	
INDPROD	0.032	0.001	-0.011	-0.008	0.0371*	0.0422**	-0.1872***	0.0578***	0.1556***	0.2123***	0.018	-0.003

*: significant at 10% level; **: significant at 5% level; ***: significant at 1% level. This table reports pooled Pearson correlation for the entire sample over the period 2005 to 2015. Correlation identified between MBE and abnormality of tools of meeting or beating analyst expectations. Correlation significant is shown with stars. For variable descriptions, please refer to Appendix A.

4.4.3 Main analysis

4.4.3.1 Analysis of association between meeting or beating analyst forecast and managerial tools

Table 4.7 reports both the coefficients for the random and the fixed logistic models' findings. However, the focus of this study is on the random effect logistic model as suggested by the Hausman Test, in which the null hypotheses is rejected. The fixed effect logistic model's results, thus, are included only to increase robustness. It predicts the relationship between MBE proxy and managerial measures. The coefficient of the abnormal of selling, general and administration expenses is positive and significant at the 0.10 level, with a *z-statistic* of 3.00. Selling, general and administration expenses are a significant portion of discretionary expenses and are one of the main activities that are used to manage earnings. This result is consistent with Roychowdhury (2006) and Doyle et al. (2013), revealing that real earnings management is one of the fundamental tools used to hit analyst expectations.

This finding provides strong support for the hypothesis that the adoption of IFRS in the UK may encourage managers to use real earnings management. As suggested by prior studies, IFRS adoption does not improve accounting quality and could increase use of opportunistic managerial tools (e.g. Daske et al., 2008; Jeanjean and Stolowy, 2008; Ahmed et al., 2013; Daske et al., 2013; Doukakis, 2014; Christensen et al., 2015; Capkun et al., 2016; Zalata and Roberts, 2017; Malikov et al., 2018). This finding may explain why the results obtained by Athanasakou et al. (2009) and Athanasakou et al. (2011) suggested that there is no empirical evidence that real earnings manipulation was utilised pre-IFRS. This supports the argument that IFRS is a principle-based rule and that these standards provide room for managers to shift between these tools.

Furthermore, the regression coefficient of managerial guidance (UEF) is positive and statistically significant at 0.01 level. This may suggest that managers are more likely to employ this tool in order to hit analyst expectations; i.e. they are in favour of this strategy in relation to others. This is consistent with prior evidence obtained by Athanasakou et al. (2009) and Athanasakou et al. (2011) in the UK pre-IFRS. It seems that managers in the UK context prefer this tool, as this technique does not require management of

reported earnings. It also has no hint of unethical behaviour, although it may affect stock prices. Matsumoto (2002) suggests that managers use it to avoid earnings surprises and to guide analyst estimates downwards if they believe that analyst forecasts are expected to be overly optimistic. Therefore, under the constraints of IFRS, managers are concerned about meeting or beating analyst forecasts to avoid a market reaction to their stock prices. This finding is consistent with this study's hypothesis that there is a positive relationship between meeting or exceeding analyst expectations and use of the managerial guidance tool.

There is weak evidence to suggest a negative relationship between accrual earnings management and meeting or beating analyst forecasts. The results are inconsistent with prior studies (e.g. Dechow et al., 2000; Matsumoto, 2002; Burgstahler and Eames, 2006; Lin et al., 2006). However, in the UK, both Athanasakou et al. (2009) and Athanasakou et al. (2011) do not provide any evidence that managers could use accrual earnings management to meet or beat analyst expectations during the UK GAAP. Thus, managers are unlikely to use accrual earning management for two reasons: because it is not common in the UK even pre-IFRS, and to avoid detection by auditors or regulators. Furthermore, there is weak evidence to suggest a positive relationship between the classification shifting tool and the MBE proxy. Despite both Zalata and Roberts (2015) and Malikov et al. (2018) providing evidence that UK firms are motivated to use this tool post-IFRS adoption, it seems that this tool is not preferred by managers in regards to hitting analyst forecasts in the post-IFRS era. This argument is consistent with Athanasakou et al. (2011), who claim that the equity market in the UK does not reward firms that hit analyst targets through classification shifting. This supports the result of an insignificant relationship between the classification tool and the MBE proxy in this study.

In relation to some of the control variables in Model (2), both signs of profit ($PROF_{i,t}$) and change in earnings ($P\Delta EARN_{i,t}$) are positive and as predicted. This result supports Degeorge et al. (1999), who claim that managers tend to focus on meeting analyst expectations if both of the other targets are met. This result is also consistent with the findings of Brown (2001) and Dopuch et al. (2008). However, firm size is negatively significant and correlated to MBE. It is consistent with previous studies that document that

larger firms may exhibit better performance and that they also have advantages of economies of scale over small firms (e.g. Fama and French, 1995; Frank and Goyal, 2003; Jermias, 2008). Therefore, these firms have earnings that can be more stable. This result is consistent with the argument that larger firms are less likely to engage in managing earnings because these firms tend to have a strong internal control system and competent auditors compared to small firms (Warfield et al., 1995). Furthermore, larger firms are normally audited by large auditing firms and it can easily be detected if these firms engage in earnings management (Francis et al., 1999).

Table 4-7: Logistics analysis of the relationship between MBE proxy and tools of hitting analyst expectations measures

Variable	Fixed-Effect Logistic Model Coefficient (z-stat)	Random-Effect Logistic Model Coefficient (z-stat)
	(1)	(2)
Constant		-0.399
		(-0.39)
AWCA	-0.005	-0.013
	(-0.04)	(-0.11)
ACFO	0.064	0.269
	(0.18)	(0.71)
APROD	0.835	0.388
	(1.42)	(0.75)
ASGA	1.894***	1.745**
	(3.01)	(3.00)
ACS	0.198	0.181
	(0.37)	(0.38)
UEF	3.159***	3.181***
	(7.13)	(7.93)
Control variables		
PROF	1.203	0.959
	(1.23)	(1.22)
PΔEARN	3.778***	3.784***
	(8.33)	(9.28)
GROWTH	0.0007	-0.003
	(0.08	(-0.39)
Size	-0.005	-0.089*
	(-0.03)	(-1.87
LID		0.163
		(0.78)
INDPROD	2.542	3.125
	(1.20)	(1.48)
Industry dummy		Yes
No. of observations	2,180	2,397
Log likelihood	-792.332	-1348.752
Wald $\chi 2$	116.64	207.41
p-value	<0.001	<0.001

*: significant at 10% level; **: significant at 5% level; ***: significant at 1% level. This table summarises the estimated parameters for earnings management regressions using fixed effect logistic regression and random effect regression for the entire sample size across all industries and years. The sample consists of 2,180 for the fixed effect logistic and 2,397 for random effect logistics. MBE represents meeting or beating analyst expectations. It is measured as the earnings surprise, which is the difference between I/B/E/S actual EPS and the consensus mean of analyst forecasts before the earnings announcement. MBE takes binary values one and zero. Continuous variables are winsorized at 1% and 99% of their distribution instead of deleting the outliers. For the description of variables used, please see Appendix A.

4.4.3.2 Analysis of association between meeting or beating analyst forecasts for loss-making firms

This section examines the relationship between the meeting or beating analyst (MBE) proxy and the abnormality of working capital accruals earnings, real earnings activities, classification shifting and unexpected managerial guidance measures, but the focus is on loss-making firms. Table 4-8 shows a negative association between the meeting or beating proxy and loss dummy variable. This relationship is strongly significant at 0.005. This finding is consistent with prior studies that suggest managers might use managerial tools to avoid reporting losses (e.g. Burgstahler and Dichev, 1997; Degeorge et al., 1999; Phillips et al., 2003; Brown and Caylor, 2005; Roychowdhury, 2006; Ebaid, 2012; Hamdi and Zarai, 2012; Gilliam et al., 2015; Pududu and Villiers, 2016). That is, managers of loss-making firms have high incentives to hit analyst forecasts. They also behave as profitable firms through utilising real earnings management and managerial guidance tools. The argument that can be made is that these firms are already being criticised for reporting negative earnings. They do not want increased criticism and increased adverse market reaction. This evidence is consistent with this study's hypothesis in respect of loss-making firms. However, there is no support for other hypotheses that neither accrual earnings management nor classification shifting can be used to hit analyst expectations even with loss-making firms. Thus, the estimated coefficients for managerial measures are consistent with that reported in Table 4-7.

Table 4-8: Fixed and random logistics analysis for relationship between MBE proxy and tools of hitting analyst expectations measures

Variable	Fixed -Effect Logistic Model Coefficient (z-stat)	Random-Effect Logistic Model Coefficient (z-stat)
	(1)	(2)
Constant		0.942
		(0.89)
AWCA	-0.014	-0.021
	(-0.12)	(-0.18)
ACFO	0.133	0.338
	(0.36)	(0.90)
APROD	0.855	0.414
	(1.42)	(0.80)
ASGA	1.964***	1.805**
	(2.93)	(2.98)
ACS	0.063	0.017
	(0.88)	(0.05)
UEF	3.176***	3.201***
	(7.29)	(8.04)
Control variables		
LOSS	-1.978***	-1.476***
	(-3.50)	(-3.43)
PCHEARN	3.778***	3.791***
	(8.28)	(9.17)
GROWTH	0.0009	-0.003
	(0.11)	(-0.40)
SIZE	-0.0088	-0.094**
	(0.00)	(-1.97)
LID		0.178
		(0.85)
INDPROD	2.392	3.033
	(1.12)	(1.42)
Industry dummy		Yes
No. of observations	2,180	2,397
Log likelihood	-788.785	-1345.676
Wald $\chi 2$	110.17	209.34
p-value	<0.001	<0.001

*: significant at 10% level; **: significant at 5% level; ***: significant at 1% level. This table summarises the estimated parameters for earnings management regressions using fixed effect logistic regression and random effect regression for the entire sample size across all industries and years. The sample consists of 2,180 for fixed effect logistic and 2,397 for random effect logistics. MBE represents meeting or beating analyst expectations. It is measured as the earnings surprise, which is the difference between I/B/E/S actual EPS and the consensus mean of analyst forecasts before the earnings announcement. MBE takes binary values one and zero. Continuous variables are winsorized at 1% and 99% of their distribution instead of deleting the outliers. For description of variables used, please see Appendix A

4.5 Robustness Checks

The researcher conducts an additional test to measure the robustness of the empirical findings. To verify the robustness of the predicted variable, the researcher examines this association using the pooled OLS logistic regression for the same variables. The regression results (Table 4-9 Model (1)) obtained by this method are robust compared to the previous findings. This evidence supports previous findings that both real earnings management and managerial guidance are used to hit analyst expectations. This is consistent with prior studies that IFRS adoption increases use of opportunistic managerial tools (e.g. Daske et al., 2008; Jeanjean and Stolowy, 2008; Ahmed et al., 2013; Daske et al., 2013; Doukakis, 2014; Christensen et al., 2015; Capkun et al., 2016; Zalata and Roberts, 2017; Malikov et al., 2018).

Moreover, Model (2) shows the average marginal effect for the regression results. The evidence indicates that there is a probability of 30% that managers will hit analyst forecasts when using real earnings management (e.g. selling, general and administrative expenses) but the likelihood of hitting analyst expectations with use of the managerial guidance tool is high at 68%. This is consistent with Li and Yang (2016) who document that IFRS adoption increases the market demand for disclosures. This increases managers' incentives to employ the managerial guidance tool. Managers have the ability to time their guidance before the actual reported earnings are announced (Hirst et al., 2008).

Table 4-9: Pooled logistics analysis of the relationship between MBE proxy and tools of hitting analyst expectations measures

Variable	Pooled Logistic Model Coefficient (z-stat)	Marginal Effect
	(1)	(2)
Constant	-0.812	
	(-0.928)	
AWCA	-0.037	-0.009
	(-0.36)	
ACFO	0.289	0.069
	(0.84)	
APROD	0.0624	0.015
	(0.12)	
ASGA	1.256***	0.302
	(2.72)	
ACS	0.123	0.029
	(0.30)	
UEF	2.841***	0.684
	(7.72)	
Control variables		
PROF	0.732	0.176
	(1.16)	
PCHEARN	3.330***	0.801
	(8.97)	
GROWTH	-0.007	-0.002
	(-0.77)	
SIZE	-0.071*	-0.017
	(-0.083)	
LID	0.175	0.042
	(0.99)	
INDPROD	3.091*	0.744
	(1.69)	
Industry dummy	Yes	
No. of observations	2,397	
Log likelihood	-1404.967	
Wald $\chi 2$	141.79	
p-value	<0.001	

*: significant at 10% level; **: significant at 5% level; ***: significant at 1% level. This table summarises the estimated parameters for earnings management regressions using pooled logistic regression for the entire sample size across all industries and years. MBE represents meeting or beating analyst expectations. It is measured as the earnings surprise, which is the difference between I/B/E/S actual EPS and the consensus mean of analyst forecasts before the earnings announcement. MBE takes binary values one and zero. Continuous variables are winsorized at 1% and 99% of their distribution. For the description of variables used, please see Appendix A.

4.6 Conclusion and Suggestions for Further Research

This study has employed recent data to investigate the tools that UK firms use to meet or beat analyst forecasts post-IFRS. The results show that real earnings management and managerial guidance are utilised by managers in the UK. The results show a positive and significant association with selling and general and administrative expenses. This finding might indicate that the chance of meeting or beating forecasts is increased through managing selling and general and administrative expenses. It is inconsistent with the prior evidence; for instance, Athanasakou et al. (2011) find no evidence that real earnings could be used to meet or beat analyst forecasts pre-IFRS. However, the finding of the current study provides strong support for the hypothesis that the adoption of IFRS in the UK may encourage managers to use real earnings management, as suggested by Jeanjean and Stolowy (2008), who claim that accounting standards have limited effect on improving the quality of financial reporting. These standards involve some judgment and use of private information. Hence, managers may use substantial discretion even with IFRS adoption. Lin et al. (2012) find that switching from the US GAAP to the IFRS increased earnings management practice. This opportunistic behaviour reduces accounting quality compares to the US GAAP period.

Furthermore, the findings of this study provide evidence that there is a positive relationship between meeting or exceeding analyst expectations and managerial guidance tool. It is more likely that UK firms will continue to guide analyst expectations to hit their forecasts. Managers might believe that analyst forecasts are overly optimistic and attempt to avoid surprising the market with unexpected earnings. This is consistent with Li and Yang (2016), who document that IFRS adoption increased market demand for disclosures. This increases managers' incentives to employ the managerial guidance tool. Managers have the ability to time their guidance before the actual reported earnings are announced (Hirst et al., 2008).

However, there is weak evidence to support any relationship between accrual earnings management and classification shifting, and meeting or beating analyst forecasts. The current study supports previous research in the UK, for instance, Athanasakou et al. (2009), who reveal no evidence that managers in the UK could use classification pre-IFRS, while Athanasakou et

al. (2011) claim that the equity market in the UK does not reward firms that hit analyst targets through use of the classification shifting tool. Zalata and Roberts (2017) suggest that firms in the UK avoid using this tool because this strategy might be associated with high costs. Therefore, the results of the current study are consistent with prior findings, as they do not show any evidence that firms could use the classification tool even in the post-IFRS era. In relation to loss-making firms, the current evidence suggests that both real earnings management and managerial guidance are used to hit analyst expectations. This is consistent with prior studies that indicate IFRS adoption increased use of opportunistic managerial tools (e.g. Daske et al., 2008; Jeanjean and Stolowy, 2008; Ahmed et al., 2013; Daske et al., 2013; Doukakis, 2014; Christensen et al., 2015; Capkun et al., 2016; Zalata and Roberts, 2017; Malikov et al., 2018). However, the results of the current study are inconsistent with both Degeorge et al. (1999) and Matsumoto (2002). In this thesis, the researcher documents that loss-making firms are highly motivated to employ real earnings management and managerial guidance to reduce the level of bad reactions to their negative earnings.

The results of this study are consistent with the theoretical base of agency theory, where there is a conflict between principals and agents or between shareholders and managers. That is, the conflict of goals between these two parties makes it difficult to verify that the management is doing what it is expected to do by the shareholders. Managers engage in various managerial tools to maintain their own interests rather than their shareholders' interests. For instance, Scott (2009) claims that earnings management reduces the transparency and reliability of financial statements. In the same vein, Nagar et al. (2003) document that managers usually avoid revealing private information in order to control their private benefits, while Davidson et al. (2005) state that there is a relationship between earnings management and agency theory. This is because managers tend to release inaccurate reports that do not represent the real picture of the business.

The results of this study have significant implications for accounting standards setters, regulators, external auditors and investors. Accounting standards could be used to minimise suspicious managerial behaviour, but they have limited power to improve the quality of financial reporting (Jeanjean and Stolowy, 2008). Thus, managers might use substantial discretion even with

IFRS adoption. The findings of this study suggest that the regulator in the UK might implement strict supervision of these firms in order to prevent the use of managerial tools following IFRS adoption.

Another important implication of this study is for external auditors. Several prior studies (e.g. Healy, 1985; Graham et al., 2005; Fan et al., 2010; Alfonso et al., 2015) document that managers use some tools instead of others to avoid the attention of auditors. Rickling et al. (2013) find that firms that meet or beat analyst expectations repeatedly are considered less risky not only by investors but also by auditors, and this is reflected in low fees charged by auditors to these firms. Thus, independent auditors should detect material cases of earnings management and report them to the appropriate authority. Further, it seems that investors are fooled by managers as they are misled by managed financial reporting. Thus, investors should interpret financial statements with caution and should not base their judgment only on the actual earnings.

This study has some limitations and provides avenues for future research. One flaw is that the sample used is relatively small due to data limitations, and it could be subject to sample bias. Therefore, this study could be expanded with a larger sample. Also, the sample used is dominated by UK firms. It leaves an interesting research question as to what extent other European countries would produce similar results. Furthermore, this study could be examined using two sub-samples, pre-crisis and post-crisis, as there had been a recession in the economy due to the financial crisis in 2007 and 2008. It could make some difference to the results obtained in this study. The results of this study indicate that managerial guidance is still used by UK managers following the adoption of IFRS. It raises a question as to why managers continue to guide analyst forecasts, since both pre-IFRS and post-IFRS periods provide similar conclusions. This is another opportunity for future research.

Moreover, the focus of prior research is on how managers meet or beat analyst forecasts, however, our understanding of the earnings game appears incomplete because most existing studies do not consider how analysts react to these managerial tools. Thus, the existing literature tends to ignore the fact that firms' objectives are to respond to analyst forecasts (Liu, 2005). Eiler et al. (2016) claim that the association between real earnings management and analyst forecasts is unstudied. They have focused current researchers' attention on the importance of investigating this relationship in order to understand the earnings game between managers and analysts. That is, how analysts react to managerial tools is an essential empirical question. Therefore, this area could be of high interest for future research.

CHAPTER 5: THE ASSOCIATION BETWEEN ANALYST REACTIONS AND MANAGERIAL TOOLS

5.1 Introduction

The earnings game between managers and analysts has received growing attention from regulators, after accounting scandals such Enron, HealthSouth, Tyco, Dot-Com and WorldCom (Richardson et al., 2004). Managers have become more concerned about analyst forecasts and avoiding a negative market reaction to their stock prices. They recognise that the market rewards firms that meet or beat analyst expectations and penalises those that fail to do so (Bartov et al., 2002; Lopez and Rees, 2002; Skinner and Sloan, 2002; Ke et al., 2003). Previous studies show that managers use opportunistic practices to meet or beat analyst forecasts (e.g. McVay, 2006; Lin et al., 2006; Bhojraj et al., 2009; Athanasakou et al., 2009; Fan et al., 2010; Barua et al., 2010; Athanasakou et al., 2011; Haw et al., 2011; Shirato and Nagata, 2012; Doyle et al., 2013; Fan and Liu, 2017). Baik and Jiang (2006) find evidence that managers encourage analysts to lower their earnings expectations to an achievable level.

Managers' motivations can be explained by prospect theory, which was developed by Kahneman and Tversky (1979). Based on this theory, people's decisions are not always rational, but they are risk-averse in decision making, and they feel more painful because of losses than positive because of gains. This theory is also used to explain the conflict between principals and agents, when the agents have a prospect theory preference (Barberis, 2013). Aaron et al. (2014) reveal that prospect theory might explain why managers are incentivised to manage earnings. They suggest that managers attempt to report earnings above the threshold to obtain bonuses. That is, managers are risk-averse in decision making and tend to avoid the pain (consequences) of missing analyst forecasts. Francis and Philbrick (1993) report that due to high pressure from the management side, analysts are forced to revise their forecasts even though it could affect the accuracy of their final forecasts.

The security market seems to place increased pressure on analysts to build relationship with managers, and deters their role as market monitors (Behn et al., 2013). Due to market pressure, analysts push firms to meet their

expectations and managers respond to that because they believe that overvalued stocks could cause a problem for their firms (Fuller and Jensen, 2002). Thus, analyst's roles in forecasting earnings have been criticised where they provide optimistic forecasts that are considered biased. It has been argued that analysts contributed to the collapse of major corporations such as Enron and Dot-Com stocks (Cowen et al., 2006; Gavious, 2009). A popular example was related to the Boeing Company, when analysts provided forecasts that were below the managerial guidance. This carried on until late 1998 when the company itself admitted to it, and all analysts lowered their estimates and expressed their disappointment (Schneider, 1999). Richardson et al. (2004) argue that analysts are criticised because they initially intend to issue optimistic expectations at the start of the fiscal period and then downgrade their forecasts to a level that firms can beat at the time of the earnings announcement. Further, Chang and Choi (2017) claim that analysts face a trade-off between providing biased forecasts to maintain a good relationship with management and issuing accurate forecasts to maintain a good reputation.

Prospect theory could also explain analyst forecasting behaviour. Analysts are risk-averse in decisions making and they make irrational decisions to avoid negative consequences of their current decisions. Ding at al. (2004) claim that analysts provide irrational forecasts and these forecasts are influenced by other factors, which in the end leads them to produce earnings estimates that are different from actual earnings. They document evidence that analysts' forecasts are more accurate during positive earnings growth, but during negative earnings growth they are over-optimistic. Abarbanell and Bernard (1992) argue that there are inefficiencies in analyst forecasts and professional analysts make regular errors in forecasting earnings. These errors could be related to psychological forces. Löffler (1998) claims that analysts work in a complex environment and face different incentives which leads the rationality of their expectations to be erratic. It has been suggested that analysts avoid predicting earnings decline either because they are unwilling or are unable to do so (Ding at al., 2004). Other studies argue that analysts are irrational because their forecasts do not reflect all relevant information that they have (Abarbanell and Bernard, 1992; Elgers and Lo, 1994).

Prior research shows that analysts initially provide optimistic forecasts and then issue pessimistic forecasts immediately before earnings announcements (e.g. Tan et al., 2002; Ke and Yu, 2006; Barron and Liang, 2013). They prefer to issue positive reports for their close clients rather than damaging their relationship with management (Trueman, 1990; Francis and Philbrick, 1993; Richardson et al., 2004). This relationship is essential to accessing private information (Francis and Philbrick, 1993; Dugar and Nathan, 1995; Das et al., 1998; Lim 2001; Chen and Matsumoto, 2006; Mayew, 2008; Gu et al., 2013; Soltes, 2014; Brown et al., 2015). Thus, the focus of prior research is on how managers meet or beat analyst forecasts; however, analysis of the earnings game is incomplete because most existing studies do not consider how analysts react to these managerial tools. Thus, the existing literature tends to ignore the fact that firms' objectives are to respond to analyst forecasts (Liu, 2005). The argument that can be made is that if this presumption is valid, then analysts do not have any motives to allow managers to hit their forecasts. It appears that analysts have a choice to either revise their projections to incorporate relevant information into their predictions, or they deliberately downgrade their projections to allow managers to meet or beat them. Eiler et al. (2016) claim that the association between real earnings management and analyst forecasts is unstudied. They have focused current researchers' attention on the importance of investigating this relationship in order to understand the earnings game between managers and analysts. Therefore, how analysts react to managerial tools is an essential empirical question on which there is insufficient evidence in the existing literature.

Another motive for conducting this study is that there is a lack of knowledge in the existing literature about the relationship between stock recommendations and managerial tools. For instance, Yezegel (2015) documents that analysts revise their recommendations to react to earnings surprises. Eiler et al. (2016) claim that overvalued stocks make analysts think that this behaviour is damaging for their clients. Thus, analysts avoid issuing sell recommendations as managers prefer to have higher stock prices. Therefore, whether analysts issue buy or sell recommendations when managers employ these tools is another interesting empirical question.

This study contributes to the literature in several ways. First, as far as the researcher is aware this study is the first that examines analyst reactions to four different tools that managers might use to hit analyst expectations. Although prior studies claim that there is a game between firm managers and security analysts (e.g. Richardson et al., 2004; Baik and Jiang, 2006), these studies do not provide adequate empirical evidence to support their argument. In this study, the study results show that on average approximately 52% of analysts keep their forecasts constant or downgrade their initial forecasts to allow managers to hit their estimates. This suggests that analysts would have a high chance to maintain their relationship with management.

Secondly, the current study's findings contribute to the previous literature on analyst optimism biases. They are consistent with prior studies that claim that analysts might compromise their accuracy to please managers, thus enabling them to access future information in the hands of management (e.g. Richardson et al., 2004; Ke and Yu, 2006; Barron and Liang, 2013; Mayew, 2008; Gu et al., 2013; Soltes, 2014; Brown et al., 2015). The results suggest that analysts probably increase the chance of downgrading their forecasts when managers provide them with more guidance.

Thirdly, the results contribute to the previous literature on pessimistic analyst forecasts and stock recommendations. Abarbanell and Lehavy (2003) find that firms which are rated with buy recommendations are more likely to be involved in use of earnings management tools. These firms tend to adjust their reported earnings to meet or beat analyst expectations. The results show that, although analysts provide pessimistic earnings forecasts before the earnings announcement, they still issue buy recommendations for these firms. This finding supports prior empirical results, which document that analysts initially provide optimistic forecasts and then issue pessimistic forecasts immediately before the earnings announcement (e.g. Tan et al., 2002; Ke and Yu, 2006; Barron and Liang, 2013).

The remainder of this chapter is structured as follows: section 5.2 presents a literature review and the research hypotheses. Section 5.3 presents the methodology and sample selection. Sections 5.4 presents the empirical tests and results. The robustness check is presented in section 5.5. Section, 5.6 concludes the study by highlighting the main findings.

5.2 Literature Review and Hypotheses Development

5.2.1 Managerial tools to meet or beat analyst forecasts

Managers are motivated to hit analyst forecasts to avoid market reactions to their stock prices, especially if there is a discrepancy between reported earnings and analyst forecasts. Managers understand that the market rewards them when they meet or beat analyst expectations Bartov et al., 2002; Lopez and Rees, 2002; Skinner and Sloan, 2002; Ke et al., 2003). Investors might view firms that fail to meet or beat analyst forecasts as being managed poorly. The existing literature shows that accrual earnings management is the first tool used by managers to hit analyst forecasts (Payne and Robb, 2000). Dechow et al. (2000) also support this; they find that these firms perform well in the future, with positive abnormal returns. Matsumoto (2002) finds a positive relationship between managing earnings and abnormal discretionary accruals. Burgstahler and Eames (2006) conclude that managers intend to guide analyst forecasts downwards, but they find that discretionary accruals are managed to hit earnings expectations.

However, when managerial incentives are restricted with standards and rules, this encourages managers to shift from accrual earnings management to real earnings management (Cohen et al., 2008; Cohen and Zarowin, 2010; Gunny, 2010; Badertscher, 2011; Zang, 2012; Alhadab et al. 2013; Kothari et al., 2016). Ewert and Wagenhofer (2005) report that managers intend to shift to real earnings manipulations when standards setters make it difficult for them to use accrual earnings management. They state that tightening accounting standards increases the quality of earnings, but these standards encourage managers to use real earnings manipulation. Thus, prior studies suggest that real earnings management is used to meet or beat analyst forecasts (e.g. Lin et al., 2006; Bhojraj et al., 2009; Athanasakou et al., 2011; Doyle et al., 2013). With this tool managers attempt to alter and restructure operational business activities instead of managing accrual accounts.

Classification shifting practice is deliberately used to inflate core earnings, but it does not affect the bottom line of reported earnings (Haw et al., 2011). However, a growing number of studies investigate use of the classification shifting tool to meet or beat analyst forecasts (McVay, 2006; Lin et al., 2006; Fan et al., 2010; Barua et al., 2010; Athanasakou et al., 2011; Haw

et al., 2011; Shirato and Nagata, 2012; Doyle et al., 2013; Fan and Liu, 2017). In addition to the above three tools, managers also employ the managerial guidance tool, which has become common behaviour in firms' disclosures. Managers have the ability to time their guidance to before the actual reported earnings are announced (Hirst et al., 2008). Ng et al. (2012) document that managerial guidance is more likely to be employed by managers in countries where legal systems and regulations are strong. Li and Yang (2016) and Rhee et al. (2016) also provide consistent results and document that this tool is commonly used by managers to hit analyst forecasts. A review of existing literature on how managers hit analyst estimates has already been provided in detail in chapter 4, section 4.2.

5.2.2 Optimistic analyst forecasts

Scholars have been motivated to examine analyst forecasts for three main reasons. The first reason is that analyst forecasts are important because their expectations are used as proxies in asset pricing and cost of capital models, which in the end are tested empirically. The second reason is that researchers might examine volatile asset price movements or anomalous market behaviour through analyst forecasts, to measure market expectations. The third reason is that these forecasts may provide an opportunity for academics to test the rational expectations hypothesis (Keane and Runkle, 1998).

These forecasts are vital because many brokerage firms intend to hire top analysts who have the ability to provide more accurate earnings estimates. Large professional investors rely heavily on commercial services that are provided by the Institutional Broker's Estimate System, Zacks, Value Line and First Call databases, to get detailed information about earnings forecasts. Earnings predictions provide essential information to predict stock price movements. Therefore, the need for more accurate earnings forecasts has been increasing (Dreman and Berry, 1995). For example, Capstaff et al. (1995) claim that research which focuses on the accuracy and properties of analyst forecasts is of interest to both academics and practitioners. It is important for practitioners because they use it for security valuations and portfolio decisions, while it is essential for academics to investigate the information content of earnings. Thus, security analysts are considered experts who assess firms'

future performance, but the importance and quality of their reports has become the subject of much debate (Beckers et al., 2004).

The issue to be addressed is whether analysts have any incentives to engage in such behaviour to allow managers to meet or beat their forecasts. It is difficult to accept that analysts have no motives to enable managers to hit their expectations. Some studies report that analysts with more accurate forecasts are less likely to be fired by their employers and generate more returns (e.g. Mikhail et al., 1999; Hong et al., 2000: Ke and Yu, 2006; Kross and Suk, 2012). Analysts who show concern about the accuracy of their estimates are more likely to promote the reputations of their brokerage firms, which may help these firms to attract more investment banking businesses (Ke and Yu, 2006). Moreover, Hilary and Hsu (2013) find that analysts who provide consistently biased forecast errors are more likely to be promoted to the All-Star Analysts list. Thus, analysts compromise their objectivity through issuing favourable reports to their clients in order to earn more bonuses (Cowen et al., 2006). Schipper (1991) reports that analysts ultimately face a conflict between their fundamental roles and their interest in maintaining a good relationship with management.

There are probably different roles for analysts, and various firms use analysts in different ways. It is possible that they are used to help security selection (in that case they must be accurate), or they can be used as part of the securities sales team (they must present a good picture of securities that the bank wants to sell), or they may assist a team that sells other services (debt and security raising); in the latter case, they must support a good relationship with managers. In the first two, they probably need to be accurate; in the last one, they need to satisfy managers and avoid embarrassments. Capstaff et al. (1995) suggest that there may be a variety of reasons that encourage analysts to focus less on forecast accuracy. The first reason is to generate more stock purchases, and this is evident for sell-side analysts who tend to provide more optimistic forecasts. Another reason is that investment analysts avoid providing pessimistic forecasts to avoid damaging their relationships with firms. A rational explanation for an analyst's failure to provide accurate forecasts is to maintain their relationship with investment banks (Dugar and Nathan, 1995; Lin and Mcnichols, 1998; O'Brien et al., 2005; Cowen et al., 2006; Wang et al., 2017).

Hong and Kubik (2003) argue that security analysts are more concerned about their careers, and analysts with accurate forecasts are more likely to be promoted to a higher status in brokerage houses. However, analysts who predict earnings for underwriters are less likely to focus on accuracy issues as they are more concerned with optimism. They suggest that brokerage houses do not care about forecast accuracy as long as analysts can generate more trading commissions from underwriting businesses and, therefore, analysts are rewarded for their optimistic reports. Karamanou (2011) reports consistent results in relation to trading commissions. Moreover, Tan et al. (2002) conduct two separate experiments with forty-seven experienced sell-side analysts for the first experiment and thirty-four analysts for the second experiment. The analysts were employed in investment banking, trading and brokerage firms. They document that corporate executives preferred analysts to issue pessimistic earnings forecasts immediately before the earnings announcement and optimistic earnings forecasts immediately after the earnings announcement, both of which lead to higher stock prices. They reveal that analysts do not adjust their forecasts, even with biased managerial guidance, to allow managers to meet their forecasts as long as this relationship is maintained.

Liu (2005) documents that analysts understand earnings management behaviour, and this allows them to incorporate manipulative behaviour into their forecasts. However, the fact is that analysts do not incorporate all significant information into their final forecasts. For instance, there is essential information such as prior earnings (DeBondt and Thaler, 1990; Abarbanell and Bernard, 1992), earnings changes (Easterwood and Nutt, 1999), forecasts errors (Mendenhall, 1991), forecasts revisions (Elliot et al.,1995), prior stock price changes (Abarbanell, 1991; Zhang, 2006; Clement et al., 2011) and stock returns (Lys and Sohn, 1990; Ali el al., 1992) that can be used to predict earnings efficiently, but analysts use only their private information to make their forecasts. Thus, a large body of existing literature supports the suggestion that analysts do not utilise all significant information available to predict earnings accurately. The criticism of their estimates has thus become an issue in the existing literature.

In general, researchers have different viewpoints towards optimistically biased forecasts. The first group claims that analysts provide rational forecasts and these estimates tend to be more optimistic in order to generate more revenues for their brokerage firms and to maintain good relationships with management in order to access private information (e.g. Francis and Philbrick, 1993; Dugar and Nathan, 1995; Das et al., 1998; Lim 2001; Chen and Matsumoto, 2006; Mayew, 2008; Gu et al., 2013; Soltes, 2014; Brown et al., 2015). The second group considers analysts as rational forecasters and truthful reporters, but they are very selective, in that they provide optimistic forecasts for specific firms (e.g. McNichols and O'Brien, 1997; Chang and Choi, 2017). The third stream of scholars views analyst forecasts as irrational because their forecasts do not reflect all of the information that they acquire (e.g. Abarbanell and Bernard, 1992; Elgers and Lo, 1994). The last group of scholars argue that analysts are rational forecasters and truthful reporters, but they are unselective. These forecasters are biased forecasters because they use a skewed distribution of earnings to improve their forecast accuracy (e.g. Gu and Wu, 2003). Basu and Markov (2004) claim that analysts do not leave the money on the table by releasing all significant information to be made readily available to the public.

Francis and Philbrick (1993) suggest that analysts face certain pressures from managers to revise their forecasts, which reduces the accuracy of their forecasts, mainly because analysts rely on management for future information. They report that analysts provide optimistic forecasts in order to maintain their relationships with management. This finding is also supported by Trueman (1990), who claims that analysts may be reluctant to revise their forecasts when they receive new information that contains negative information about a firm, and eliminating this information might affect the accuracy of their forecasts. Analysts may find it difficult if they upset management at investor conferences as managers are essential sources of information for them. The business press also identifies some cases where analysts lost their jobs after providing unfavourable reporting for their clients (Richardson et al., 2004). Ke and Yu (2006) suggest that executives are satisfied if analysts first issue optimistic forecasts and then pessimistic forecasts after the earnings announcement because, in this case, it is more likely that this will affect stock prices in their favour.

Chang and Choi (2017) suggest that analysts issue more optimistically biased earnings reports because they are not penalised for inaccurate forecasts. This allows them to provide biased reports to generate more trading activity.

5.2.3 Analyst reactions to managerial tools

There is a growing body of literature on tools that managers use to meet or beat analyst forecasts (McVay, 2006; Lin et al., 2006; Bhojraj et al., 2009; Athanasakou et al., 2009: Fan et al., 2010; Barua et al., 2010; Athanasakou et al., 2011; Haw et al., 2011; Shirato and Nagata, 2012; Doyle et al., 2013; Fan and Liu, 2017). The early-stage literature began to investigate accrual earnings management as the main tool used to meet or beat analyst forecasts. Then scholars identified other tools such as real earnings management, classification shifting and managerial guidance. Managers are motivated to hit analyst forecasts because they are concerned with market reactions to their stock prices, especially if there is a discrepancy between reported earnings and analyst forecasts. Investors might view firms that fail to meet or beat analyst forecasts as being managed poorly. For instance, Kasznik and McNicholos (2002) report that returns for firms that meet expectations are significant. These firms are found to have higher earnings forecasts than others that miss targets. Managers recognise that the market rewards firms that meet or beat analyst expectations and penalises those that fail to do so (Bartov et al., 2002; Lopez and Rees, 2002; Skinner and Sloan, 2002; Ke et al., 2003; Rickling et al., 2013).

A vast amount of research literature focuses on accrual earnings management (Healy, 1985; DeAngelo, 1986; Jones, 1991; Petroni, 1992; Dechow et al., 1995; Beaver and Engel, 1996; Kang and Sivaramakrishnan, 1995; Beneish, 1997; Beaver and McNichols, 1998; Kasznik, 1999; Phillips et al., 2003; Kothari et al. 2005; Alhadab et al., 2013; Kothari et al., 2016; Owens et al., 2017). The existing literature shows that accrual-based earnings management is used by managers to hit analyst forecasts. For instance, Payne and Robb (2000) report that discretionary accruals are used to achieve analyst expectations and managers utilise this tool when the dispersion in analyst forecasts is low. Dechow et al. (2000) also support this, finding that these firms perform well in the future with positive abnormal returns. Matsumoto (2002)

examines the incentive of avoiding negative earnings surprises for meeting or exceeding analyst forecasts. He finds a positive relationship between managing earnings and abnormal discretionary accruals. Burgstahler and Eames (2006) conclude that managers intend to guide analyst forecasts downwards, but they find that discretionary accruals are managed to hit earnings expectations.

Furthermore, the literature on the earnings game is incomplete because most existing studies do not consider how analysts react to use of these managerial tools. For example, whether analysts react positively or negatively to use of the accrual earnings tool would probably rely on the associated costs of this tool. Previous studies support the argument that analysts provide optimistic forecasts in order to maintain their relationship with management (e.g. Francis and Philbrick, 1993; Dugar and Nathan, 1995; Das et al., 1998; Lim 2001; Chen and Matsumoto, 2006; Mayew, 2008; Gu et al., 2013; Soltes, 2014; Brown et al., 2015). Thus, it appears that there is an implicit earnings game between managers and analysts, but the existing literature tends to ignore the fact that firms' objectives are to respond to analyst forecasts (Liu, 2005). Chang and Choi (2017) claim that analysts face a trade-off between maintaining a good relationship with managers and maintaining a good reputation in the market.

Prior studies, however, do not support the suggestion that accrual earnings management is used to meet or beat analyst forecasts in the UK pre-IFRS period (e.g. Athanasakou et al., 2009: Athanasakou et al., 2011). This study uses data that covers the period from 2005 to 2015, i.e. post-IFRS adoption. It is difficult to predict whether managers in the UK are incentivised to use this tool post-IFRS implementation. Even through this tool is used, analysts might not prefer managers to use this tool because it leads to suspicion in regards to their forecasts. Therefore, this study predicts that analysts react negatively to use of the accrual earnings management tool, and the following hypothesis is developed:

> *Hypothesis (1): Ceteris paribus, there is a significant negative association between analyst reactions and use of the accrual earnings management tool.*

However, accrual earnings management can be impeded with restrictions imposed by corporate governance or standards (Yu, 2008). These restrictions encourage managers to shift to real earnings management as an alternative tool (Cohen et al., 2008; Cohen and Zarowin, 2010; Gunny, 2010; Badertscher, 2011; Zang, 2012; Alhadab et al. 2013; Kothari et al., 2016). He and Tian (2013) reveal that high analyst coverage increases pressure on managers to achieve short-term targets, while Sun and Liu (2016) suggest that this pressure from analysts encourages managers to shift to real earnings management. Eiler et al. (2016) claim that the association between real earnings management and analyst forecasts is unstudied. Thus, based on the previous discussion, analysts are more likely to react to real earnings management than accrual earnings management. Moreover, Eiler et al. (2016) document that forecast error is greater for firms that use real earnings management. This could indicate that managers use real earnings management to make it difficult for analysts to spot this managerial practice compared to accrual earnings management. However, it is difficult to determine the exact direction of this relationship and whether analysts respond positively or negatively to this managerial tool. If analysts place pressure on managers to use real earnings management, then the association is more likely to be positive. In other words, analysts allow managers meet their forecasts. On the other hand, if analysts are concerned about their forecasts, then this relationship is supposed to be negative and analysts are not willing to see managers use the real earnings management tool. Hence, the following hypothesis is developed:

Hypothesis (2): Ceteris paribus, there is a significant association between analyst reactions and the real earnings management tool.

Moreover, classification shifting is an earnings management tool that is used to misclassify core expenses, which might include the cost of goods sold and general and administrative expenses, into non-core items. This practice is deliberately used to inflate core earnings, but it does not affect the bottom line of reported earnings (Haw et al., 2011). Classification shifting is well documented in the existing literature (Ronen and Sadan, 1975; Barnea et al., 1976; McVay, 2006; Athanasakou et al., 2009; Barua et al., 2010; Fan et al., 2010; Haw et al., 2011; Shirato and Nagata, 2012; Alfonso et al., 2015; Zalata

and Roberts, 2015; Noh et al., 2017; Zalata and Roberts, 2017; Malikov et al., 2018). Similarly, the classification shifting tool is well documented in the existing literature and is also used to meet or beat analyst forecasts (McVay, 2006; Lin et al., 2006; Fan et al., 2010; Barua et al., 2010; Athanasakou et al., 2011; Haw et al., 2011; Shirato and Nagata, 2012; Doyle et al., 2013; Fan and Liu, 2017). Bradshaw and Sloan (2002) claim that analysts are interested in core earnings reported by managers to help them to predict earnings after excluding some earnings components. Analysts can influence firms' financial reporting when they demand a high quality of accounting information and this allows them to impede classification shifting practices (Behn et al., 2013).

Further, Zalata and Roberts (2015) find that UK firms are motivated to reclassify recurring items as non-recurring in order to inflate core earnings. Another piece of evidence from the UK is provided by Malikov et al. (2018), who report that firms use this tool to inflate operating revenues. They found an increasing trend for use of this tool, and they suggest that the IFRS provide managers with another tool to manage earnings. These studies provide evidence that recently UK firms have intended to employ this tool as an alternative to other tools. However, Athanasakou et al. (2011) claim that the equity market in the UK did not reward firms that hit analyst targets through classification shifting during the UK GAAP period. Thus, there is a lack of evidence in the literature on examining the role of analyst forecasts in constraining use of the classification shifting tool (Behn et al., 2013). It is difficult to predict whether or not analysts have incentives to react to classification shifting. In the view of this discussion, analysts are less likely to react positively to this opportunistic managerial practice. Hence, the following hypothesis is developed:

> *Hypothesis (3): Ceteris paribus, there is a significant negative association between analyst reactions and use of the classification shifting tool.*

In addition to earnings management tools, managers also employ managerial guidance in order to hit analyst forecasts (Bartov et al., 2002; Matsumoto, 2002; Cotter et al., 2006; Lin et al., 2006; Athanasakou et al., 2009; Athanasakou et al., 2011; Ng et al., 2012; Firth et al., 2013; Li and Yang, 2016; Rhee et al., 2016). Tan et al. (2002) find that these analysts are aware of management guidance to downgrade their forecasts and admitted that they react to this by issuing optimistic forecasts. Surprisingly, analysts state that this, in the end, benefits their relationship with management and investment banking businesses. Tan et al. (2002) suggest that analysts do not adjust their forecasts, even with biased managerial guidance, to allow managers to meet their forecasts, as long as this relationship is maintained. Further, Louis et al. (2013) report that analysts understand managerial guidance and analysts might estimate earnings that are close to the actual reported earnings. Hilary and Hsu (2013) find that analysts who provided consistently biased forecast errors were more likely to be promoted to the All-Star Analysts list. Chang and Choi (2017) suggest that analysts are encouraged to issue favourable reports because they are not penalised for biased forecasts. This allows them to provide biased reports to generate more trading activity. Thus, analysts more likely prefer to use the managerial tool, as it less likely to catch the attention of auditors or investors. This tendency is increased due to the criticism that analysts receive in regard their estimates, which are in favour of managers. Therefore, it would be expected that analysts would respond positively to the managerial guidance tool compared to the other tools, as this tool requires less involvement in managing earnings. Thus, the following hypothesis is developed:

> *Hypothesis (4): Ceteris paribus, there is a significant positive association between analyst reactions and use of the managerial guidance tool.*

Furthermore, what encourages sell-side analysts to issue favourable recommendations is the desire to generate more stock purchases (Capstaff et al., 1995). It is probable that these analysts issue more buy recommendations than sell recommendations in order to increase the pressure to purchase more stocks. A notable piece of evidence was obtained by Abarbanell and Lehavy (2003), who find that firms that are rated with buy recommendations are more likely to be involved in earnings management. These firms tend to adjust their

reported earnings to meet or beat analyst expectations. Yezegel (2015) documents that analysts revise their recommendations to react to earnings surprises. Analysts attempt to get more valuable information for their clients. Barber and Loeffler (1993) find that the average return from stock recommendations is approximately 4% only in the first two days following the recommendations. They suggest that the reason is related to the purchasing pressure in regard to some specific stocks that analysts recommend. Further, Tan et al. (2002) claim that analysts do not adjust their forecasts even with biased managerial guidance to allow managers to hit their forecasts. Tan et al. (2002) claim that top management prefer analysts to issue pessimistic earnings forecasts immediately before the earnings announcement and optimistic earnings forecasts immediately after the earnings announcement. This behaviour leads to influence stock prices upward.

A common approach that has been identified from the existing literature is that analysts attempt to issue initial optimistic forecasts and then convert these forecasts into pessimistic predictions before the earnings announcement. For instance, Ke and Yu (2006) document evidence that analysts' initial forecasts were optimistic, but they then issued pessimistic forecasts before the earnings announcement. These biased forecasts are aimed at pleasing managers in return for future private information. Executives are pleased if analysts first issue optimistic forecasts and then pessimistic forecasts after the earnings announcement because in this case, it is more likely that this will affect stock prices in their favours.

In addition, Barron and Liang (2013) argue that analysts who provide pessimistic forecasts are more reluctant to reveal their forecasts later than other analysts. They suggest three reasons for issuing pessimistic forecasts. The first reason is that issuing late, pessimistic forecasts is not likely to annoy managers because these forecasts may guide managers to beat their forecasts. In this case, this may please management and help analysts have access to better information in the future. The second reason is that pessimistic forecasts have two effects on investors' perceptions. These forecasts may create incentives for investors to sell their stocks, while on the other side, these forecasts reduce investor uncertainty by encouraging them to buy more stocks. These trading incentives may offset each other, in which investors may intend to hold their stocks. The third reason is that issuing pessimistic forecasts leads to a reduction

in brokerage commissions. Therefore, analysts are less likely to provide pessimistic forecasts compared to optimistic forecasts.

The argument that can be made is that analysts are expected to issue buy (sell) recommendations when stock prices are predicted to be undervalued (overvalued). The validity of this presumption is logical if analysts are concerned about the accuracy of their forecasts, but according to the prior literature discussed earlier, analysts attempt to provide biased forecasts in favour of managers in order to please them. Analysts push these firms to meet their expectations and managers respond to that because they believe that overvalued stocks cause a problem for firms (Fuller and Jensen, 2002). Thus, it is less likely that analysts will issue sell recommendations for firms that they maintain a good relationship with. Fuller and Jensen (2002) claim that overvalued stocks make analysts think that this behaviour is damaging for their clients. Thus, analysts avoid issuing sell recommendations as managers prefer to have higher stock prices.

However, there is a lack of sufficient evidence on the association between managerial tools and stock recommendations. The researcher in the current study introduced two scenarios on the expected stock recommendations issued by analysts to these firms. The first scenario suggests that if analysts intend to downgrade their forecasts and issue buy stock recommendations, then it is expected that analysts are in favour of managers. Thus, they allow managers to hit their earnings estimates, but they encourage investors to buy these stocks. In other words, they contradict themselves, and they are more likely prefer to maintain their relationship with managers. In contrast, the second scenario is that analysts attempt to downgrade their forecasts, but they issue sell recommendations to be consistent with their predictions. That is, analysts lower their earnings estimates because they believe that these stocks are overvalued and encourage investors to sell these stocks.

Therefore, whether analysts provide buy or sell stock recommendations would probably rely on a trade-off between providing biased forecasts for maintaining a good relationship with management or issuing accurate forecasts to maintain a good reputation in the industry, as reported by Chang and Choi (2017). Due to lack of empirical evidence on the association between managerial tools and stock recommendations, the researcher develops the following hypotheses:

Hypothesis (5A): Ceteris paribus, if analysts react negatively to use of the accrual earnings management tool, then it is expected that analysts will issue sell stock recommendations to these firms.

Hypothesis (5B): Ceteris paribus, if analysts react negatively to use of the real earnings management tool, then it is expected that analysts will issue sell stock recommendations to these firms.

Hypothesis (5C): Ceteris paribus, if analysts react negatively to use of the classification shifting tool, then it is expected that analysts will issue sell stock recommendations to these firms.

Hypothesis (5D): Ceteris paribus, if analysts react negatively to use of the managerial guidance tool, then it is expected that analysts will issue sell stock recommendations to these firms.

5.3 Methodology and Sample Selection

5.3.1 Analyst reaction proxy

Based on prior studies, Guthrie and Sokolowsky (2010) find that around 40% of published accounts estimated discretionary accruals in the fourth quarter, which may indicate that managers are highly motivated to manage earnings during the fourth quarter. Another consistent result was obtained by Fan et al. (2010), who documented that managers are more likely to manage earnings through classification shifting during the fourth quarter. These findings might indicate that analysts are aware of managerial incentives and it would thus be expected that analysts are probably motivated to provide biased forecasts between the third and fourth quarters. This is because the fourth quarter is close to the final reported earnings and analysts have more chance to lower their initial forecasts between the third and the fourth quarters. In this study, the researcher suggests that keeping or downgrading analyst forecasts (KDG) can be determined as the difference between the I/B/E/S consensus forecast EPS in the fourth quarter and the I/B/E/S consensus forecast EPS in the third quarter. If the difference tends to be negative or zero, then a dummy variable of 1 is given for **(**KDG), otherwise 0.

5.3.2 Managerial tools measures

The measures of abnormality for working capital accruals, real earnings management, classification shifting, and unexpected managerial guidance are obtained in a similar approach to that discussed in chapter 4, section 4.3.2.

5.3.3 Panel logistic regression model

From the above section, the proxy identified by the researcher for the dependent variable of KGD takes values of zero and one. The most appropriate regression models for dealing with binary variables are logistic models. These models are used to overcome the linear probability model through applying a variant of the cumulative logistic function. These models have a common structure, in which the dependent variable takes two values with Bernoulli distribution (Cameron and Trivedi, 2010). However, the assumption under logistic regression is based on underlying qualitative DVs, whereas the probit model assumes that DVs are normally distributed. That is, the distribution assumption makes probit regression to be more restrictive than the logit model (Tabachnick and Fidell, 2007). In this study, the logit model is used to test the relationship between analyst reaction proxy and managerial measures. Therefore, managerial measures are also determined in the form of dummy variables as follows (Table 5-1):

Table 5-1*:* Dummy variables for managerial measures

Measure	Definition
AWCA	Dummy is equal to 1 if abnormal WCA is positive, otherwise 0
ACFO	Dummy is equal to 1 if abnormal CFO is positive, otherwise 0
APROD	Dummy is equal to 1 if abnormal PROD is positive, otherwise 0
ASGA	Dummy is equal to 1 if abnormal SGA is positive, otherwise 0
ACS	Dummy is equal to 1 if abnormal ACS is positive, otherwise 0
UEF	Dummy is equal to 1 if unexpected UEF is negative, otherwise 0

As the data structure for this thesis is panel data, the researcher checked the appropriateness between the fixed effect and the random effect through applying the Hausman Test. The choice between each of these models relies on assumptions regarding the existence of a correlation between the heterogeneity

and the independent variables. For the KDG model, the result for the Hausman Test is shown in Table 5-2. The result shows that the most appropriate model is the fixed effect model. The fixed effect model is vital and is commonly used by researchers to deal with correlated omitted variables. The assumption under this model is that firm and time correlated with the independent variables. In this study, the fixed effect logistic model is applied.

Table 5-2: Result of Hausman test for panel logistic model

Regression Model	Parameter	Fixed versus Random	Null hypothesis	Appropriateness
MBE	$\chi 2$	28.67		
	p	0.0014		
	Hypothesis	Ho: difference in coefficients not systematic	Rejected	Fixed effect

5.3.4 Empirical model

To examine analyst reactions to various tools that managers used to target analyst expectations, this study focuses on four main tools that are popular in the existing literature. This is determined through measuring the probabilities of keeping or downgrading their initial forecasts in relation to abnormal working capital accruals (AWCA), abnormal real earnings management (ACFO, APROD and ASGA), abnormal classification shifting (ACS) and unexpected managerial guidance (UEF) measures. These abnormality proxies are tested using contingency tables and multivariate models to control other factors that affect analyst intentions to keep or downgrade their forecasts. This is performed using the fixed effect logistic regression model as follows[19]:

[19] Several diagnostic tests were performed to test the statistical assumptions of the logistic model. For the Box-Tidwell Test, the interaction terms of continuous variables obtained by this test appear to be insignificant ($p > 0.05$; two-tailed). Thus, the result has passed this test. For the multicollinearity test, VIFs and correlation matrix both indicated that no potential collinearity problem could be identified. To account for heteroscedasticity, the robust standard error was added to the regression model. To check the model's performance in terms of goodness of fit, the Hosmer-Lemeshow test was conducted for the logistic model. Based on this test, the p-value shows insignificant results ($p > 0.05$; $\chi 2 = 13.66$), which indicates a good fit of the model. Furthermore, using the classification table, the model can predict approximately 55.53%. Please refer to Appendix D for full details for these tests.

$$\text{Prob(KDG} = 1/\text{X)} = \text{F}\ (\ \alpha_i + \beta_1 \text{AWCA}_{i,t} + \beta_2 \text{ACFO}_{i,t} + \beta_3 \text{APROD}_{i,t} + \beta_4 \text{ASGA}_{i,t} + \beta_5 \text{ACS}_{i,t} + \beta_6 \text{UEF}_{i,t} + \beta_7 \text{SIZE}_{i,t} + \beta_8 \text{FOLLW}_{i,t} + \beta_9 \text{FERROR}_{i,t} + \beta_{10} \text{INDPROD}_{i,t} + \varepsilon_{i,t} \quad (5.1)$$

$$\text{KDG} = \begin{cases} 1 & if\ KDG * \leq 0 \\ 0 & otherwise \end{cases}$$

$$Where\ \text{F}\ (\text{B}'\text{X}) = e^{B'X} / \ (1 + \text{e}^{\text{B}'\text{X}}\ )$$

Several control variables are included to control for other factors that might affect optimistic analyst forecasts. The first control variable is the size of firms. To control for firm size, the log of total assets is used. Chan and Hameed (2006) suggest that analysts are more motivated to follow larger firms to obtain private information rather than smaller firms. On the other hand, larger shareholders' institutions are also attracted to information produced by analysts. This is also supported by Hussain (2000), who documents empirical evidence that there is a positive relationship between analyst following and firm size. Thus, it is expected that analysts are more likely to lower their forecasts for larger firms, and the sign of this control variable is predicted to be positive.

Another variable is thus analyst following ($FOLLW_{i,t}$), which is calculated as the number of analysts who provide forecasts for each firm-year. Lim (2001) finds that analyst following is inversely related to optimistically biased forecasts. Gu and Wu (2003) claim that the size of analyst following is positively correlated with optimistic bias. Furthermore, analyst optimistic bias is increased with analyst following, to get more access to the management, due to higher competition among analysts. Liu (2005) also finds a positive sign with this control variable and suggests that there is a relationship between the size of analyst following and optimism.

O'Brien and Bhushan (1990) find evidence that there is a relation between analyst following and the costs and benefits of gathering information. They find that analysts prefer to follow firms with more regulated industries and are less likely to follows firms that have high competition among their following. Lys and Soo (1995) report that high competition increases forecast accuracy because analysts are motivated to obtain better information for their clients. In this study, it is expected that if analyst coverage level is high,

analysts are expected to provide less optimistic forecasts. Therefore, the sign of this control variable is predicted to be positive.

To control for forecast error due to environment uncertainty forecast error, (*FERROR*) is added to the model. This is calculated as the difference between the mean of consensus analyst EPS forecasts and the mean of the actual reported EPS; all are available in I/B/E/S from Thomson Reuters. Elton et al. (1984) report that around 84 per cent of forecast error is not related to economic factors, but to incorrect estimates provided by analysts. Brown and Han (1992) also document that when there is a consensus among analysts about future firm performance, information asymmetry tends to decrease.

Some firms have a higher level of forecast error due to their earnings volatility (Clarke and Shastri, 2000). Thus, when analysts find it difficult to predict firms' earnings because of environmental uncertainty, it is more likely that forecast error will be high. Analysts may compensate for this with greater earnings predictions to minimise their forecast errors (Gu and Wu, 2003). It is predicted that the sign of this control variable will be positive. Finally, to control for the effect of macroeconomic conditions on forecast error, average annual growth in industrial production (INDPORD) is added to the regression model, as suggested by Athanasakou et al. (2009). Industry dummies (INDD) are used to control for industry differences which cannot be explained by the control variables.

5.3.5 Sample selection

The details of data used in this study are discussed in section 4.3.1 (chapter 4). However, this study also includes some data related to stock recommendations to buy, hold or sell, which are extracted from the Thomson Reuters I/B/E/S database. The data shows that most of the recommendations are buy recommendations, with approximately 70%, and the remaining are sell and hold. I/B/E/S uses scales for these recommendations; for instance, for buy the scale is between 1 and 2.49, while for hold and sell it uses scales between 2.5 and 3.49 and between 3.50 and 5, respectively.

5.4 Empirical Tests and Results

This section aims to provide an empirical analysis on how analysts react to managerial tools and whether analysts are motivated to provide biased forecasts in favour of managers. The main measures identified are abnormal working capital accruals (AWCA), abnormal operating cash flow (ACFO), abnormal production costs (APROD), abnormal selling, general and administrative expenses (ASGA), abnormal classification shifting (ACS), and unexpected managerial guidance (UEF).

5.4.1 Descriptive statistics

Table 5-3 provides the descriptive statistics for the key variables from the KDG model. The mean ratio for KDG is shown to be approximately 52%. This might indicate that in around half of the sample, analysts attempt to keep or downgrade their forecasts to allow managers to meet or beat their expectations. On the other hand, the managerial guidance tool represents an average of 30%. The average ratio for the sample size (log of total assets) is £13.75 million, whereas the average total number of analysts is about 12. This suggests that these firms have a high analyst following.

5.4.2 Correlation matrices

Table 5-4 reports a summary of Spearman correlations between the key variables used in this study. The analyst reactions proxy is negatively correlated with accrual earning management. It suggests that analysts do not prefer to see managers use this tool to meet or beat their forecasts because there is a high chance that they will be discovered by auditors or investors, especially if their earnings predictions are being criticised on many occasions. Another key finding from Table 5-4 is related to the fourth tool, managerial guidance, in regards to analyst expectations. The relationship between this tool and KDG is strongly significant, with a positive sign. This might suggest that analysts intentionally encourage managers to use this strategic tool compared to the other tools. This technique does not require any direct manipulation of financial reporting and allows analysts to maintain a good relationship with managers as well.

Further interesting and notable findings from Table 5-4 are related to the forecast error (FERROR) control variable, which is used to measure environment uncertainty. Forecast error shows a significant positive correlation with the explained variable (KDG). This result might indicate that analysts face difficulties in predicting earnings when environment uncertainty is high. For instance, when earnings are more volatile (Clarke and Shastri, 2000), the difference between reported earnings and consensus forecast tends to be high. This, perhaps, has nothing to do with economic factors, but means analysts have less guidance to predict actual earnings. This finding is consistent with the findings of Elton et al. (1984), who report that around eighty-four per cent of forecast error is not related to economic factors, but to incorrect estimates provided by analysts. It could suggest that analysts downgrade their initial forecasts to please managers and to avoid a high gap between their estimates and the actual reported earnings under a high level of environmental uncertainty.

Table 5-3: Descriptive statistics for the key variables

Variable	N	Mean	Median	SD	p25	p75
Panel A: Keep or Downgrade forecast proxy						
KDG	2,966	0.518	1.000	0.499	0.000	1.000
Panel B: Managerial measures						
AWCA	2,686	0.572	1.000	0.495	0.000	1.000
ACFO	2,686	0.037	0.000	0.188	0.000	0.000
APROD	2,686	0.021	0.000	0.143	0.000	0.000
ASGA	2,634	0.009	0.000	0.096	0.000	0.000
ACS	2,625	0.962	1.000	0.191	1.000	1.000
UEF	2,406	0.300	0.000	0.458	0.000	1.000
Panel C: Control variables						
SIZE	2,966	13.749	13.620	1.691	12.588	14.789
FOLLW	2,966	11.700	11.000	7.610	5.000	17.000
FERROR	2,966	0.022	-0.002	0.201	-0.017	0.018
INDPRO	2,966	-0.001	0.009	0.024	-0.012	0.014

This table summarises the descriptive statistics of each variable used in the KDG model. KDG represents analyst decisions to keep or downgrade their initial forecasts for managers. It can be determined as the difference between I/B/E/S EPS in the third quarter and I/B/E/S EPS in the fourth quarter. If the difference tends to be negative or zero, then a dummy variable of 1 is given for (KDG), and otherwise 0. The 25% quartile indicates the value of the 25th percentile of the frequency distribution and the 75% quartile is the third quarter of the frequency distribution. For variable descriptions, please refer to Appendix A.

Table 5-4: Spearman correlation for the key variables

Variable	KDG	AWCA	ACFO	APROD	ASGA	ACS	UEF	SIZE	FOLLW	FERROR
AWCA	-0.011									
ACFO	-0.024	0.0083								
APROD	0.040**	-0.024	0.055***							
ASGA	-0.015	0.004	0.176***	0.017						
ACS	0.035*	0.077***	0.295***	0.092***	0.071***					
UEF	0.109***	-0.068***	-0.0188	-0.0149	-0.052**	0.0007				
SIZE	0.030	-0.019	0.085***	0.041**	-0.082***	0.086***	0.0165			
FOLLW	0.008	-0.022	0.094***	-0.0096	-0.059***	0.109***	-0.019	0.742***		
FERROR	0.078***	-0.019	-0.041**	-0.032	0.037*	-0.094***	-0.067***	0.035*	0.021	
INDPROD	0.048**	0.0007	-0.011	-0.008	0.037	0.042**	-0.187***	0.018	0.006	-0.018

*: significant at 10% level; **: significant at 5% level; ***: significant at 1% level. This table reports pooled Pearson correlation for the entire sample over the period 2005 to 2015. Correlation was identified between KDG and abnormality of methods of meeting or beating analyst expectations. Correlation significance is shown with stars. For variable descriptions, please refer to Appendix A.

5.4.3 The main analysis

5.4.3.1 Analysis of the association between analyst reaction and managerial measures

Table 5-5 reports the coefficients for the panel logistic model.[20] Based on the Hausman test, the fixed effect logistic model was applied. It predicts the relationship between analyst reaction proxy (KDG) and managerial measures. The coefficient of the abnormal of production costs is positive and significant at the 0.05 level, with a *z-statistic* of 2.20. This might suggest that analysts are likely to react to this tool when managers manipulate the cost of goods sold by excessive inventories to meet analyst expectations. In contrast, managerial guidance (UEF) shows a positive and significant (0.397, z=3.65) association with the explained variable (KDG). This might indicate that analysts are more likely to react positively to this tool when managers provide more guidance to their predictions. This could benefit both analysts and managers. It helps managers to hit analyst forecasts and helps analysts to maintain their relationship with managers.

These exciting findings provide evidence on how managers and security analysts mislead market participants. Richardson et al. (2004) argue that analysts are criticised because they first intend to issue optimistic expectations at the start of the fiscal period and then bring down their forecasts to a level that allows firms to meet or beat their estimates during the period of the earnings announcement. This suggests that analysts are more incentivised to lower their expectations as long as firms' managers are guiding them with such information. Furthermore, Ke and Yu (2006) document evidence that shows analysts initially start to issue optimistic forecasts, and then issue pessimistic forecasts before the earnings announcement. These biased forecasts are used to please managers in exchange for access to private information in the future. They suggest that these analysts are less likely to be fired by their employers. Therefore, analysts' careers are more likely to benefit from the extent to which they please managers. Barron and Liang (2013) argue that analysts who provide pessimistic forecasts are more reluctant to revise their

[20] Together, random and fixed logistic models provide similar findings. However, the focus of this study is on the fixed effect logistic model as suggested by the Hausman Test, in which the null hypotheses is not rejected.

forecasts later than other analysts. They suggest that late issuing, pessimistic forecasts are not likely to annoy managers because these forecasts may guide them to beat their forecasts. This finding is consistent with this study's hypothesis that analysts react positively to use of the managerial guidance tool. By contrast, there is weak evidence to suggest a negative association between accrual earnings management and analyst reaction proxy. Managers may prefer to use this tool to hit analyst forecasts (e.g. Dechow et al., 2000; Matsumoto, 2002; Burgstahler and Eames, 2006; Lin et al., 2006); however, analysts might not prefer managers to use this tool because it leads to suspicion in regards to their forecasts. This is especially the case if the market is strong and investors have high protection rights, like in the UK market (Iatridis, 2010). Furthermore, there is weak evidence to suggest a significant relationship between use of the classification shifting tool and analyst reactions. It appears that analysts do not prefer that this tool is used to meet or beat their forecasts. This, perhaps, is consistent with Athanasakou et al. (2011), who claim that the equity market in the UK does not reward firms that hit analyst targets through classification shifting.

In relation to some of the control variables in Model (1) of Table 5-5, the sign of firm size ($Size_{i,t}$) is positive and significant. This is consistent with Hussain's (2000) findings; Hussain documents a positive relationship between analyst following and firm size. Thus, analysts are more likely to keep or downgrade their forecasts for larger firms compared with smaller firms. Additionally, analyst following ($FOLLW_{i,t}$) shows a positive sign but insignificant. Gu and Wu (2003) claim that the number of analysts following a firm is positively correlated with optimistic bias. Thus, when the analyst following is high, then there is high chance that analysts will provide biased forecasts. This is also supported by Liu (2005), who reports similar results. In terms of forecast error, which is related to environment uncertainty (FERROR), it also shows a positive result. There might be other factors that cause these estimates to be biased, and these factors could be other than economic factors (Elton et al., 1984). This is because analysts find it difficult to predict firms' earnings when environment uncertainty is high, and this might be the reason for a positive sign for forecast error.

Table 5-5: Logistics analysis of the relationship between KDG proxy and managerial measures

Variable	Fixed -Effect Logistic Model Coefficient (z-stat)	Random-Effect Logistic Model Coefficient (z-stat)
	(1)	(2)
Constant		-0.368
		(-0.42)
AWCA	0.009	-0.023
	(0.09)	(-0.25)
ACFO	-0.078	-0.081
	(-0.23)	(-0.29)
APROD	0.927**	0.872**
	(2.20)	(2.42)
ASGA	-0.114	-0.103
	(-0.18)	(-0.18)
ACS	0.502	0.329
	(1.60)	(1.28)
UEF	0.397***	0.518***
	(3.65)	(5.03)
Control variables:		
SIZE	0.329*	0.075
	(1.69)	(1.53)
FOLLW	0.012	-0.005
	(0.62)	(-0.48)
FERROR	0.203	0.275
	(0.52)	(0.85)
INDPROD	5.604***	6.688***
	(3.00)	(3.67)
Industry dummy		Yes
N	2,294	2,397
Log likelihood	-1045.523	-1595.433
Wald $\chi 2$	32.16	70.23
p-value	<0.001	<0.001

*: significant at 10% level; **: significant at 5% level; ***: significant at 1% level. This table summarises the estimated parameters for earnings management regressions using fixed effect logistic regression and random effect regression for the entire sample size used across all industries and years. The sample consists of 2,294 for fixed effect logistic and 2,397 for random effect logistics. KDG represents that analysts keep or downgrade their final forecasts. It can be determined as the difference between I/B/E/S EPS in the third quarter and I/B/E/S EPS in the fourth quarter. If the difference tends to be negative or zero, then a dummy variable of 1 is given for (KDG), and otherwise 0. Continuous variables are winsorized at 1% and 99% of their distribution. For the description of variables used, please see Appendix A.

5.4.3.2 Analysis of abnormal production costs (APROD)

This section aims to extend the previous investigation and specifically focuses on manufacturing firms instead of using the entire sample. In the previous regression overproduction costs are calculated as the total cost of goods sold (cost of revenue) and the change in inventory. The concept of overproduction, according to Roychowdhury (2006), is relevant to both manufacturing and non-manufacturing firms, but it is better to use production costs rather than the cost of goods sold for two reasons. Roychowdhury (2006) argues that managers can reduce the level of cost of goods sold (COGS) through delaying the write-off of obsolete inventories, and this does not affect production costs. Roychowdhury (2006) also claims that the method of LIFO or FIFO affects reporting of the cost of goods sold (GOCS), but does not affect costs of production as there is an offsetting effect between (COGS) and change in inventory. Therefore, Roychowdhury (2006) used overproduction costs for the whole sample.

However, for non-manufacturing (service) companies this concept might not be applicable because the inventory account often does not exist for service companies. In Model (2) of Table 5-6, the fixed effect logistic model regresses again with only manufacturing firms.[21] The results obtained are inconsistent with Model (1), and the significance for overproduction costs for manufacturing firms has disappeared, while managerial guidance (UEF) is still strongly significant with the same sign. This suggests that analysts are highly motivated to keep or downgrade their initial forecasts if managers guide their forecasts. In other words, analysts tend to please their managers in order to maintain their relationship with firm management.

[21] Manufacturing firms are those that includes the industries with the following codes: 2000 Industrials, 3000 Consumer Goods, 1000 Basic Materials, and 0001 Oil & Gas, according to the Industry Classification Benchmark (ICB).

Table 5-6: Fixed effect logistic regression for manufacturing firms

Variable	Fixed -Effect Logistic Model Coefficient (z-stat)	Fixed -Effect Logistic Model Coefficient (z-stat)
	Full sample	Manufacturing firms
	(1)	(2)
AWCA	0.009	-0.011
	(0.09)	(-0.09)
ACFO	-0.078	-0.007
	(-0.23)	(-0.01)
APROD	0.927**	
	(2.20)	
MANFa		0.525
		(0.81)
ASGA	-0.114	-0.208
	(-0.18)	(-0.29)
ACS	0.502	0.0.417
	(1.60)	(0.94)
UEF	0.397***	0.419***
	(3.65)	(3.10)
Control variables:		
SIZE	0.329*	0.543**
	(1.69)	(2.07)
FOLLW	0.012	0.014
	(0.62)	(0.61)
FERROR	0.203	0.168
	(0.52)	(0.40)
INDPROD	5.604***	3.249
	(3.00)	(1.47)
N	2,294	1,506
Log likelihood	-1045.523	-686.335
Wald $\chi 2$	32.16	19.06
p-value	<0.001	<0.05

*: significant at 10% level; **: significant at 5% level; ***: significant at 1% level. This table summarises the estimated parameters for earnings management regressions using fixed effect logistic regression for the entire sample size and manufacturing firms between 2005 and 2015. KDG represents that analysts keep or downgrade their final forecasts. It can be determined as the difference between I/B/E/S EPS in the third quarter and I/B/E/S EPS in the fourth quarter. If the difference tends to be negative or zero, then a dummy variable of 1 is given for (KDG), and otherwise 0. Continuous variables are winsorized at 1% and 99% of their distribution. For description of variables used, please see Appendix A.

5.4.3.3 Analysis of stock recommendations in regard to managerial measures

5.4.3.3.1 The trend of stock analyst recommendations

This part expands the previous investigation on analyst reactions to managerial tools and whether analysts provide favourable recommendations to these firms. Figure 5-1 provides the line chart of the average percentage of buy, hold and sell recommendations over the period between 2005 and 2015. The figure shows that there was a significant increase in issuing sell or hold recommendations between 2008 and 2010. In contrast, there was a sharp drop in providing buy recommendations during the same period. This period falls within the financial crisis period, and during that time, analysts may have faced some difficulties in predicting stock movements because the level of environmental uncertainty (forecast error) surrounding these firms is high. This is consistent with Elton et al. (1984). However, from 2013 onward three lines of stock recommendations shows that for buy recommendations there was a slight increase, while the other two lines showed a gradual decline.

Figure 5-2 presents the bar chart for the average percentage of stock recommendations between 2004 and 2015 at an 11-year interval. The data collected from I/B/E/S shows that most of the recommendations are buy recommendations with approximately 70%, and the remaining are sell and hold. Interestingly, in the previous analysis, the mean ratio for analysts who keep or downgrade their final forecasts is approximately 52%. This might indicate that analysts allow managers to hit their predictions. However, it would be assumed that analysts are more likely to issue sell recommendations instead of buy if they are concerned about their forecasts' accuracy, but this is not the case here. Thus, analysts provide pessimistic earnings forecasts before the earnings announcement, and on the other hand, they issue buy recommendations for these firms. This supports previous empirical results (e.g. Tan et al., 2002; Ke and Yu, 2006; Barron and Liang, 2013), which document that analysts initially provide optimistic forecasts and then issue pessimistic forecasts immediately before earnings announcements. The reason for this might be to maintain a good relationship with managers.

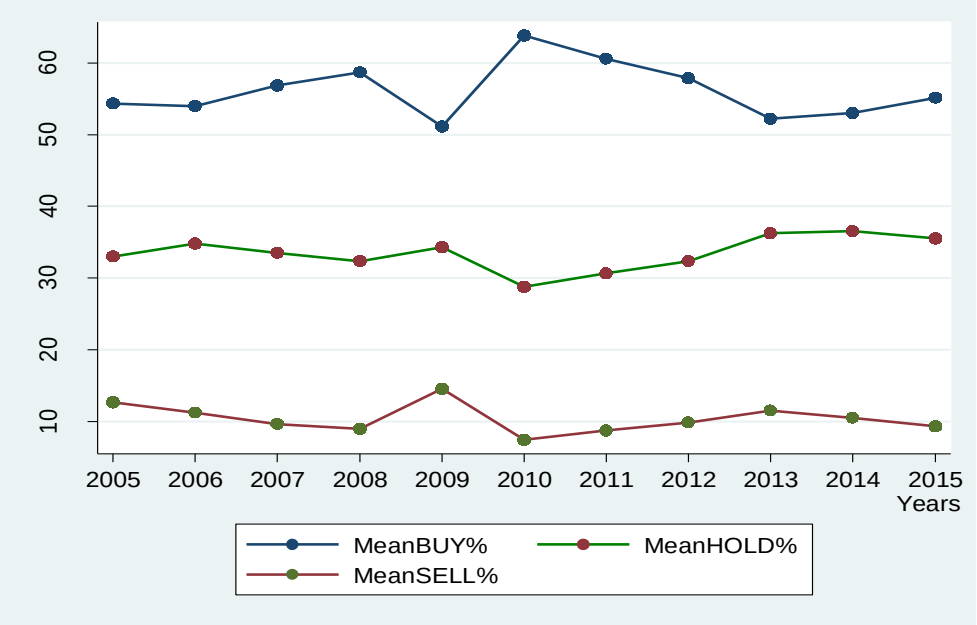


Figure 5-1: The trend of stock analyst recommendations between 2005 and 2015

This figure represents the patterns of stock recommendations through lines over years of study. There are three main recommendations, buy, hold and sell. Buy recommendation takes a scale between 1 and 2.49, while hold takes values between 2.5 and 3.39. For sell recommendations, values must fall between 3.5 and 5. These values are extracted from the I/B/E/S database.

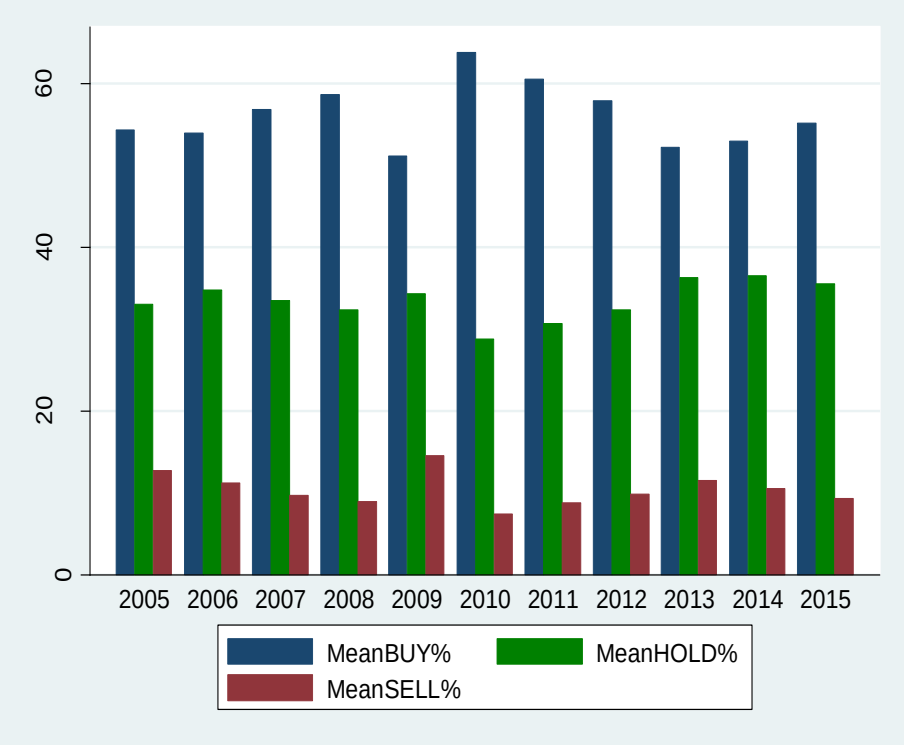


Figure 5-2: The bar chart of stock analyst recommendations between 2005 and 2015

This figure is similar to the above figure 5-1 represents the trends of stock recommendations through bars over years of study. There are three main recommendations, buy, hold and sell. Buy recommendation takes a scale between 1 and 2.49, while hold takes values between 2.5 and 3.39. For sell recommendations, values must fall between 3.5 and 5. These values are extracted from the I/B/E/S database.

5.4.3.3.2 Analysis of stock recommendation proxy

In this section, the researcher further expands the analysis and includes interaction with the sell recommendation proxy for each managerial measure (e.g. SELL*AWCA, SELL*ACFO, SELL*APROD, SELL*ASGA, SELL*ACS, SELL*UEF). For example, if managers use the managerial guidance tool and analysts issue sell recommendations, then this dummy variable (SELL*UEF) is given a value of 1, otherwise zero. Table 5-7 reports the coefficients for the fixed effect logistic model for six regressions output. Thus, Model (6) shows that both the managerial guidance tool and the interaction dummy of the sell recommendation are statistically significant. Initially, Model (6) in this table shows that managerial guidance is still statistically significant with analyst reaction proxy, and this is consistent with previous results. However, its interaction with sell recommendation (SELL*UEF) is statistically significant and negatively correlated with analyst reaction proxy (KDG). This suggests that analysts are less likely to issue sell recommendations for firms that provide more managerial guidance. In other words, analysts are highly incentivised to issue more buy recommendations even though these firms attempt to provide more guidance. This is consistent with Tan et al. (2002), who claim that analysts do not adjust their forecasts even with biased managerial guidance to allow managers to meet their forecasts and as a result, maintain a good relationship with these managers.

The results of this study also support previous literature (e.g. Tan et al., 2002; Ke and Yu, 2006; Barron and Liang, 2013). The interesting conclusion about these studies is that analysts initially provide optimistic forecasts and then issue pessimistic forecasts immediately before the earnings announcement to avoid annoying managers and to allow them to meet or beat their forecasts. This result is consistent with the hypothesis that there is a negative relationship between keeping or lowering analyst forecasts and sell recommendations under the managerial guidance tool.

Table 5-7: Fixed effect logistic regression with sell recommendation interaction

Variable	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)
AWCA	-0.0378					
	(-0.42)					
SELL*AWCA	-13.541***					
	(-13.52)					
ACFO		-0.1625				
		(-0.60)				
SELL*ACFO		0.4098***				
		(8.04)				
APROD			0.8149**			
			(2.1)			
SELL*APROD			-13.384***			
			(-0.84)			
ASGA				-0.1078		
				(-0.21)		
SELL*ASGA				2.113		
				(1.16)		
ACS					0.5084	
					(1.64)	
SELL*ACS					-13.949***	
					(-16)	
UEF						0.4041***
						(3.68)
SELL*UEF						-13.39***
						(-16.86)
SIZE	0.539***	0.5297***	0.5271***	0.5357***	0.5159***	0.3183
	(3.25)	(3.18)	(3.01)	(3.23)	(2.87)	(1.63)
FOLLOW	0.0172	0.0167	0.0173	0.0171	0.0149	0.0141
	(0.96)	(0.93)	(0.95)	(0.96)	(0.82)	(0.76)
FERROR	-0.0417	-0.0291	0.0658	-0.0368	0.0878	0.1893
	(-0.11)	(-0.08)	(0.18)	(-0.1)	(0.23)	(0.52)
INDPROD	3.336*	3.1318*	3.4017*	3.221*	3.298*	5.683***
	(1.93)	(1.81)	(1.94)	(0.1)	(1.86)	(3.08)
N	2,616	2,616	2,564	2,616	2,554	2,304
Wald $\chi 2$	200.32	308.1	210.53	20.24	277.2	305.38
R-sq	0.0123	0.0120	0.0138	0.0132	0.0142	0.0166
p-value	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

*: significant at 10% level; **: significant at 5% level; ***: significant at 1% level. This table summarises the estimated parameters for earnings management regressions using fixed logistic regressions for the entire sample size. It includes interaction with the sell recommendation proxy for each managerial measure. KDG represents that analysts keep or downgrade their final forecasts. It can be determined as the difference between I/B/E/S EPS in the third quarter and I/B/E/S EPS in the fourth quarter. If the difference tends to be negative or zero, then a dummy variable of 1 is given for (KDG), and otherwise 0. Continuous variables are winsorized at 1% and 99% of their distribution. For a description of the variables used, please see Appendix A.

5.5 Robustness Checks

In this section, the researcher conducts additional tests to measure the robustness of the empirical findings. To verify the robustness of the explained variable (KDG), the researcher re-estimated the pooled (OLS) logistic regression for the same variables, and the results are shown in Table 5-8. The sign of managerial guidance (UEF) in regression (1) indicates that analysts react positively to the managerial guidance tool. Furthermore, the results also show that (KDG) is positively correlated with abnormal production costs (APROD). However, the significance of the abnormal production proxy disappears when the regression (2) runs with manufacturing firms alone. The researcher additionally dropped the (APRD) proxy from the regression and re-examined the relationship with other measures, as shown with the regression result (3), and the results still provide consistent findings. This might suggest that analysts only react positively to the managerial guidance tool. Thus, the regression results obtained by this tool are robust to the previous findings and consistent with the fixed logistics model tested earlier.

Table 5-8: Pooled logistics analysis of the relationship between KDG proxy and managerial measures

Variable	Pooled Logistic Model Coefficient (z-stat)	Pooled Logistic Model Coefficient (z-stat)	Pooled Logistic Model Coefficient (z-stat)
	(1)	(2)	(3)
Constant	-0.949	-0.627	-0.847
	(-1.82)	(-0.94)	(-1.63)
AWCA	-0.042	-0.028	-0.044
	(-0.47)	(-0.25)	(-0.50)
ACFO	-0.073	-0.429	-0.063
	(-0.29)	(-1.209)	(-0.26)
APROD	0.809**		
	(2.50)		
MANFa		0.452	
		(0.79)	
ASGA	-0.104	0.119	-0.084
	(-0.24)	(0.26)	(-0.20)
ACS	0.253	0.555	0.218
	(1.07)	(1.62	(0.92)
UEF	0.535***	0.506***	0.535***
	(5.67)	(4.28)	(5.72)
Control variables:			
SIZE	0.0706*	0.023	0.067*
	(1.87)	(0.49)	(1.73)
FOLLW	-0.007	-0.003	-0.006
	(-0.82)	(-0.24)	(-0.67)
FERROR	0.297	0.387	0.037
	(1.13)	(1.32)	(1.16)
INDPROD	6.477***	4.514**	6.507***
	(3.94)	(2.19)	(3.95)
Industry dummy	Yes	Yes	Yes
N	2,397	1,546	2,397
Log-likelihood	-1609.974	-1036.219	-1613.351
Wald $\chi 2$	90.03	55.29	83.41
p-value	<0.001	<0.001	<0.001

*: significant at 10% level; **: significant at 5% level; ***: significant at 1% level. This table summarises the estimated parameters for earnings management regressions using pooled logistic regression for the entire sample size used, and for manufacturing firms only between 2005 and 2015. KDG represents that analysts keep or downgrade their final forecasts. It can be determined as the difference between I/B/E/S EPS in the third quarter and I/B/E/S EPS in the fourth quarter. If the difference tends to be negative or zero, then a dummy variable of 1 is given for (KDG), and otherwise 0. Continuous variables are winsorized at 1% and 99% of their distribution. For a description of the variables used, please see Appendix A.

5.6 Conclusion and Suggestions for Future Research

This study has employed recent data to investigate how analysts react to managerial tools that are used to meet or beat their forecasts between 2005 and 2015 in the UK. The results show that the most common tool used is managerial guidance, which is highly positive and significant. This may indicate that analysts are more likely to downgrade their forecasts when managers provide them more voluntary accounting information or guidance. This is consistent with Tan et al. (2002), who argue that analysts do not adjust their forecasts even with biased managerial guidance to allow managers to meet their forecasts, as long as this relationship is maintained. Tan et al. (2002) find that these analysts are aware of management guidance to downgrade their forecasts and note that they react to this by issuing optimistic forecasts.

However, Chang and Choi (2017) suggest that analysts issue more optimistic biased earnings because they are not penalised for inaccurate forecasts. This allows them to provide biased reports in order to generate more trading activity. However, this study found no evidence for the hypothesis that analysts react to the accrual earnings management, real earnings management or classification shifting tools. This might indicate that analysts in the UK do not prefer managers to use these tools. Thus, managers could use one or two tools to hit their expectations, but analysts are cautious as they do not want to attract the attention of the regulator or external auditors, which could damage their reputation in the market.

Furthermore, when the interaction variable of sell recommendations is included in the original model, the managerial guidance tool still shows as positive and significant with the explained variable. However, the interaction of sell recommendations is negatively correlated with the analyst reaction proxy. This might suggest that analysts are less likely to issue sell recommendations for firms that provide them with more guidance. In other words, analysts probably issue more buy recommendations even though these firms attempt to guide their forecasts down. Analysts push these firms to meet their expectations and managers respond to that because they believe that overvalued stocks cause a problem for firms (Fuller and Jensen, 2002).

Eiler et al. (2016) claim that analysts do not prefer to issue sell recommendations for overvalued stocks because analysts think that this behaviour is damaging for their clients. Thus, analysts avoid issuing sell recommendations as managers like to have higher stock prices. Overall, the results of this study are consistent with the theoretical base of prospect theory, which was developed by Kahneman and Tversky (1979). This theory explains opportunistic managerial practice in engaging with managerial tools and also explains the behaviour of analysts in reaction to these managerial tools. For instance, Aaron et al. (2014) reveal that prospect theory might explain why managers are incentivised to manage earnings. They suggest that managers attempt to report earnings above the threshold to obtain bonuses. That is, managers are risk-averse in decision making and they tend to avoid the pain (consequences) of missing analyst forecasts. The security market seems to place increased pressure on analysts to build relationships with managers and deters their roles as market monitors (Behn et al., 2013). Therefore, managers according to this theory are risk-averse, and might choose irrational decisions to avoid the future consequences of their current decisions.

The results are consistent with prospect theory, in which analyst is irrational. Analysts push these firms to meet their expectations because they believe that overvalued stocks cause a problem for firms (Fuller and Jensen, 2002). This is also documented by Eiler et al. (2016) who claim that analysts do not prefer to issue overvalued stocks because analysts think that this behaviour is damaging for their clients. Chang and Choi (2017) argue that analysts face a trade-off between providing biased forecasts to maintain good relationships with management and issuing accurate forecasts to maintain a good reputation. This is consistent with the prospect theory viewpoint that analysts are risk-averse in decision making and make irrational decisions to avoid the negative consequences of their current decisions.

For example, Ding at al. (2004) claim that analysts provide irrational forecasts and these forecasts are influenced by other factors, which in the end lead them to provide earnings estimates that are different from actual earnings. Abarbanell and Bernard (1992) argue that there are inefficiencies in analyst forecasts, and professional analysts make regular errors in forecasting earnings. These errors could be related to psychological forces. Löffler (1998) claims that analysts work in a complex environment and face a variety of different

incentives, which leads the rationality of their expectations to be erratic. Ding at al. (2004) suggest that analysts avoid predicting earnings decline either because they are unwilling or unable to do so. This is also supported by several studies in the literature (e.g. Abarbanell and Bernard, 1992; Elgers and Lo, 1994).

The results of this study have significant implications for investors and regulators. This study implies that investors fail to recognise analysts' biased estimates. Thus, misrepresentations in analyst predictions can influence the information content of prices. It seems that investors are misled by analysts who provide favourable earnings in order to maintain their relationship with managers. Therefore, investors should be cautious in interpreting analyst predictions and should evaluate the accuracy of their estimates. The results of this study suggest that regulators should understand that the impact of analyst behaviour not only influences the welfare of investor, it also influences the efficiency of the security market.

In brief, this study has some limitations and provides interesting avenues for future research. Firstly, the sample used in this study is relatively small due to data limitation, and could be subject to sample bias. Therefore, this study could be expanded with a larger sample using cross-sectional studies that include other European countries. Secondly, to measure analyst reactions to managerial tools, the researcher used the keep or downgrade proxy. However, another area of research which may be of high interest for future is to investigate the association between analyst accuracy and managerial tools, in order to find out whether the results are still consistent with this study. Thirdly, another suggested avenue for future research is to re-examine this relationship using two sub-samples: pre-financial crisis and post-finical crisis. Future findings could show some differences from the results obtained in this study. Finally, further research could be conducted to find out why analysts attempt to keep or downgrade their final earnings predictions, and then issue buy recommendations for these firms. These areas of research may be of high interest for future research.

CHAPTER 6: THE ASSOCIATION BETWEEN MANAGERIAL TOOLS AND INFORMATION ASYMMETRY

6.1 Introduction

Repeated accounting scandals have called the validity of earnings into question. According to Jensen and Meckling (1976), managers might not act in the best interest of their principals (shareholders), and this creates a conflict between the agents (managers) and the principals. Thus, managerial discretion in financial reports is more likely to create an imbalance between the information that managers hold and the information that shareholders receive (Purwanti and Kurniawan, 2013). For example, managers often withhold bad news to avoid any adverse reaction from investors, but good news tends to be leaked to the market (Kothari et al., 2009). Investors find it difficult to make considerable investments when managers avoid reporting private information. Therefore, the quality of information obtained by investors influences their investment decisions in any equity market. It differentiates between informed investors who use their informational advantages to gain profits, compared to other investors who have less accessibility to this private information (Amiram et al., 2016). This imbalance of information creates information asymmetry. The concept of information asymmetry was developed at an earlier stage by Akerlof (1970).

Investigation of information asymmetry attracted the attention of numerous scholars in the fields of accounting and finance. For instance, Abosede and Oseni (2011) state that the impact of asymmetric information needs to be measured and tested empirically. Sufi (2007) and Karlan et al. (2009) claim that information asymmetry cannot be observed directly, but the presence of asymmetric information may cause the market to fail (Zerbe and McCurdy, 1999; Borooah, 2003). The failure in the market leads to an increase in the cost of capital and influences investor trading behaviour adversely (Bhattacharya and Spiegel, 1991). Chu and Song (2010) argue that shareholders could contribute to an increase in the level of information asymmetry to compensate themselves for any losses that are associated with the information disadvantages.

Further, Wiyadi and Sasongko (2015) claim that the presence of information asymmetry is because of earnings management behaviour. The investigation of the impact of managerial tools on information asymmetry has motivated scholars to provide empirical evidence from different contexts. However, the fact is that researchers often have different perceptions of managerial tools, tending to suggest that earnings management is centred on two perspectives: the opportunistic perspective and the informative perspective. The first approach adopts the viewpoint that managers employ manipulative tools to achieve specific targets while the second approach suggests that managers use these tools to provide private information to make financial reporting more relevant (Beneish, 2001).

There is a debate among scholars about the impact of managerial tools on information asymmetry. For example, Beneish (2001) argues that the limitation of the existing definitions of earnings management is whether managers deliberately intend to mislead users or to inform them; this is unclear to researchers. Further, Mitra and Rodrigue (2002) claim that previous studies fail to determine empirically whether the earnings management explored by the existing research follows the opportunistic perspective or the informative perspective. Jiraporn et al. (2008) claim that the literature on whether to view earnings management practices as opportunistic or beneficial is somewhat ambiguous. Much prior research supports the suggestion that managers use managerial tools in response to certain motivations, which have significant consequences for different users (Black et al., 1998). There are many incentives that encourage managers to use these tools. These motivations could be to obtain bonuses, avoid any debt-covenant violations, meet earnings benchmarks**,** or meet or beat analyst forecasts (e.g. Roychowdhury, 2006; Jha, 2013; Doyle et al., 2013; Aaron et al., 2014; Fan and Liu, 2017).

On the contrary, other studies do support the informative perspective, in which managers may convey private information that is beneficial for stakeholders (Holthausen, 1990; Watts and Zimmerman, 1990; Healy and Palepu, 1993; Subramanyam, 1996; Fields et al., 2001; Arya et al., 2003; Louis and Robinson, 2005; Jiraporn et al., 2008; Siregar and Utama, 2008; Rahman et al., 2013). For instance, Fields et al. (2001) suggest that managers use earnings management to provide users with private information that could be useful for decision making. Beneish (2001) claims that managers release private

information to users through these tools to make financial reporting more relevant. Similarly, it has been documented that earnings management could improve earnings through reflecting economic value, as reported by Subramanyam (1996), who documents evidence that engaging in discretionary accruals management might provide a useful assessment to forecast future cash flow. In the same vein, Arya et al. (2003) claim that earnings management is crucial as it gives more value to information than unmanaged earnings. Moreover, Louis and Robinson (2005) suggest that managers utilise discretionary accruals to convey confidential information to investors. Rahman et al. (2013) argue that managers use accounting methods that are allowed by GAAP and these are used to communicate private information to users. They report evidence to support the suggestion that managing earnings is used to reduce information asymmetry. Jiraporn et al. (2008) find a positive relationship between earnings management and firm value using Tobin's measure. Lin et al. (2016) suggest that managers engage directly in business investing and operating decisions, and thus it is easy for them to predict their future performance related to their earnings and future cash flow. Managers use this approach to convey private information to external users.

Therefore, it appears that there is a contradiction among scholars on whether earnings management informs users or misleads them. However, these prior studies tend to focus more on the opportunistic perspective and overlook the second approach. Rahman et al. (2013) claim that there are limited studies that investigate earnings management from the information perspective. They reveal that it is this gap in the literature that makes prior studies support the argument that earnings management is harmful to users of financial information. Lin et al. (2016) claim that prior literature suggests that firms should avoid or eliminate use of earnings management in order to improve accounting quality. They reveal that if managers ceased earnings management practices entirely, this is expected to affect the ability of managers to convey their private information to investors, however, this private information is essential to assess firm performance.

In general, there are two theories that can explain the association between managerial tools and information asymmetry. These theories are agency theory and signalling theory. The effect of these managerial tools on information asymmetry relies on whether these tools lead to an increase or a

decrease in information symmetry. Agency theory suggests that managers use opportunistic practices to mislead users of accounting information and that this is more likely lead to an increase in information asymmetry. In other words, according to this theory, there is a positive relationship between managerial tools and information asymmetry. On the contrary, signalling theory claims that managers employ these managerial tools to convey private accounting information to users as a signal in order to improve firm value. Thus, this managerial practice is used to inform users with additional essential information. Managers probably use these tools to avoid market reactions, which could cause severe consequences to stock prices if the actual results are released. These signals, according to this theory, are important as this leads to a reduction in information asymmetry. Therefore, based on signalling theory, there is a negative relationship between managerial tools and information asymmetry.

The core motive of this study is to investigate the impact of four managerial tools (accrual earnings management, real earnings management, classification shifting and managerial guidance) on information asymmetry and whether managers in the UK use the opportunistic perspective or the informative perspective. Abad et al. (2016) reveal that there is still little evidence of the relationship between real earnings management and information asymmetry. They claim that prior studies focus more on the US market and that the US context has different features compared to others. Countries differ in terms of stock market liquidity, accounting quality and investor protection level. In other words, this investigation of other markets might provide inconsistent results compared to those in the US. Therefore, this study aims to examine how UK managers use this tool to influence information asymmetry.

Further, as far as the researcher is aware there is lack of evidence that examines the association between the classification shifting earnings management tool and information asymmetry. Prior studies document that classification shifting is used to mislead investors, however, how this tool influences information asymmetry remains an issue that is amenable to empirical analysis as there is insufficient evidence in this regard. Moreover, it has been argued that the tool is used to signal that these firms more probably employ earning management. Firms use this tool to influence analyst forecasts

(Hu et al., 2014). Furthermore, little is known regarding how the managerial guidance tool influences information asymmetry. The assumption in many studies is that managerial guidance is used to hit analyst expectations, but the validity of this presumption is an empirical question regarding whether managers employ this tool as a technique to mislead investors or to inform them through conveying private information. Thus, the researcher of this study aims to address and fill this gap in the literature as well.

This study contributes to the literature in several ways. Firstly, it provides new evidence of the impact of managerial tools on information asymmetry. To the best of the researcher's knowledge, it is the first study that examines the effect of four different managerial tools on information asymmetry using UK evidence. Prior studies such as Abad et al. (2016) claim that the research on the relationship between earnings management and information mainly focuses on accrual earnings management (Richardson, 2000; Bhattacharya et al., 2013) and little evidence is provided for real earnings management. The results show a strong and positive association between real earnings management and information asymmetry. They show that this tool leads to an increase in the level of asymmetric information. This is consistent with agency theory, which predicts that managers employ these managerial tools to mislead users. The attractive and notable result is that managers in the UK use the opportunistic approach. Real earnings management is used to mislead investors and managers prefer to use this technique as it is less likely that it will be detected by regulators or independent auditors.

Secondly, the results of this research show that abnormality of both cash flow from operating together with selling, general and administration expenses have a positive and statistically significant impact on the bid-ask spread. Thus, the current study's findings contribute to the previous literature on the impact of IFRS on information asymmetry. These findings are inconsistent with prior studies (Leuz and Verrecchia, 2000; Abad et al., 2017; Turki et al., 2017) that claim that international standards appear to reduce the level of information asymmetry. The results support prior studies that these standards do not improve accounting quality and could increase use of opportunistic managerial tools (e.g. Daske et al., 2008; Jeanjean and Stolowy, 2008; Ahmed et al., 2013; Daske et al., 2013; Doukakis, 2014; Christensen et al., 2015; Capkun et al., 2016; Zalata and Roberts, 2017; Malikov et al., 2018).

Thirdly, the results contribute to previous studies that document that larger firms may have better performance and that they also have advantages of economies of scale over small firms (e.g. Fama and French, 1995; Frank and Goyal, 2003; Jermias, 2008). These firms may have stable earnings compared to smaller firms. The results of this research show that firm size is negatively associated with the spread. This is consistent with the argument that larger firms tend to have strong internal control systems and competent auditors compared to smaller firms (Warfield et al., 1995). Further, larger firms are normally audited by large auditing firms and it can easily be detected if these firms engage in managing earnings (Francis et al., 1999).

The remainder of this chapter is structured as follows: section 6.2 presents a literature review and the research hypotheses. Section 6.3 presents the methodology and sample selection. Section 6.4 presents the empirical tests and results. Section 6.5 presents the results of the endogeneity test. The robustness check is presented in section 6.6. The last section, 6.7, concludes the study by highlighting the main findings and providing some suggestions for future research.

6.2 Literature Review and Hypotheses Development

There is a growing body of research on tools that managers use to manage accounting information. Healy and Wahlen (1999) argue that managers restructure business transactions to change financial reports, which leads to the end of misleading stakeholders. Further, Schipper (1989) states that managers are those who have private information, but they usually do not reveal this information fully to the public. This behaviour creates a gap between those who have access to private information (informed groups) and those who do not have access to these business activities directly (uninformed groups). Wiyadi and Sasongko (2015) claim that the presence of information asymmetry is because of earnings management behaviour. Therefore, information asymmetry becomes an issue in regards to earnings management behaviour.

Empirical evidence on the impact of accrual earnings management on information asymmetry has been reported in several prior studies (e.g. Richardson, 2000; Francis et al., 2005; Bhattacharya et al., 2013). Initially, the accruals do not reflect actual cash flow (Jung and Kwon, 1988). Also, accruals

accounting is subjective because management uses judgments to estimate the effects of future accruals occurrences. Therefore, this subjectivity opens the door to managers to manage earnings (Brealey et al., 2011). For instance, Richardson (2000) finds a positive relationship between information asymmetry and accrual earnings management. He suggests that when the level of information asymmetry is high between managers and shareholders, then there is more chance that these firms will be involved in managing accruals. In the same vein, Bhattacharya et al. (2013) find that discretionary accruals are significantly associated with asymmetric information.

In contrast, Cormier et al. (2013) discovered weak evidence to suggest a positive relationship between accrual earnings management and information asymmetry. They suggest that with environment uncertainty, as in the Canadian stock market, investors struggle to assess earnings manipulation. If these firms use discretionary accruals, then it is easy for this to be detected by investors. They conclude that this finding could be related to the characteristics of the Canadian market, as it is a less liquid and less transparent stock market in comparison to the US market. The strength of this relationship might rely on the characteristics of the equity market, as it varies among countries. Therefore, it is evident in some contexts but not in others. However, prior studies do not support the suggestion that accrual earnings management is a common practice in the UK (e.g. Athanasakou et al., 2009: Athanasakou et al., 2011). Accrual earnings management could be a suspicious behaviour and might be detected by either investors or auditors. Thus, it is more likely that managers' trade-off between these tools relies on the costs and benefits of each tool. However, as this study focuses on the period between 2005 and 2015 (post-IFRS), it is difficult to predict whether managers in the UK are incentivised to use this tool post-IFRS implementation. Thus, it is difficult to determine the exact direction in regards to whether managers use accrual earnings management to inform or mislead investors. Hence, the following hypothesis is developed:

> *Hypothesis (1): Ceteris paribus, there is a significant association between accrual earnings management and information asymmetry.*

Further, Roychowdhury (2006) documents that managing earnings is not limited to accounting accruals, but can also be achieved through operational activities. Real earnings management is an alternative tool used by managers, and it could have an impact on asymmetric information as well, especially because managerial actions have become restricted with standards and regulations. Leuz and Verrecchia (2000) provide evidence that international standards reduce information asymmetry through lowering the bid-ask spread and increasing share turnover. These standards, such as IFRS adoption, capture the interests of investors and managers (Turki et al., 2017). It has been argued that the IFRS attempt to reduce accounting information as managers are constrained by only limited accounting policies (Turki et al., 2017). Abad et al. (2017) also support the suggestion that the IFRS increase investor confidence and this leads to a reduction in asymmetric information. They report that the benefits could be related to the adoption, but other factors include the level of enforcement by a country, the extent of the support by the country during the implementation process and the reporting incentives for managers. They find strong evidence that the IFRS had an impact on reducing information asymmetry.

Abad et al. (2016) investigated the impact of this tool on information asymmetry using market microstructure measures. They find a positive relationship between real earnings activities and asymmetric information. They suggest that real activities manipulation enhances private information in the stock market, using data from Spain's equity market. Several studies show that real earnings management is an opportunistic practice, which causes a firm's value to decline (e.g. Roychowdhury, 2006; Bhojraj et al., 2009; Cohen and Zarowin, 2010; Kim and Sohn, 2013). While other studies document that real earnings management is used to improve a firm's performance and thus is used as an informative strategy (e.g. Bartov et al., 2002; Gunny, 2010; Zhao et al., 2012).

However, according to signalling theory, which was initially developed by Akerlof (1970), information asymmetry among parties leads to adverse selection. The existence of asymmetric information creates a gap between informed parties who possess private (inside) information and uninformed parties who rely on public information to base their investment decisions on (Amiram et al., 2016). Spence (1973) claims that the provider of the signalling

activity aims to reveal information that leads to a reduction in information asymmetry. Glosten and Milgrom (1985) document that managers are encouraged to release private information, and it does not matter whether this news is good or bad, because this news leads to a reduction in information asymmetry. Moreover, Bartov and Bodnar (1996) suggest that managers who intend to increase their firm's value are more likely to switch to the accounting technique that makes their financial reporting more informative to investors. This behaviour, in the end, leads to a reduction in information asymmetry. In the same vein, Brown and Hillegeist (2007) find a negative association between quality of disclosure and information asymmetry, while Beneish (2001) suggests that managers release information to make financial reporting more relevant. Zhang (2001) provides a theoretical model of the relationship between private information production, public disclosure and the cost of capital. Zhang suggests that whether there is an increase or decrease in the level of information asymmetry, this relies on the quality of disclosures provided by firms. Thus, good quality of disclosure is expected to have a different impact on information asymmetry compared to a poor disclosure. Prior studies also show that there is a negative relationship between earnings quality and information asymmetry (e.g. Francis et al., 2005; Bhattacharya et al., 2013; Cormier et al., 2013; Eliwa et al., 2016). Rahman et al. (2013) report that earnings management could be considered a signal because managers have the ability to influence investors' confidence about their firm's performance.

Thus, based on the above discussion and under the constraints of these standards, it would be expected that UK firms are more likely to shift to the real earnings management tool because it is difficult for auditors and investors to detect. This study predicts that this tool is used to reduce information asymmetry. Dichev et al. (2013) reveal that managers use real earnings management because it is less likely to be detected not only by market traders but also by security analysts. This tool provides an advantage to sophisticated traders, with potential gains from this private information. This practice allows for the creation of information asymmetry between informed and uninformed traders (Abad et al., 2016). Thus, managers employ this tool to provide private information to inform investors, rather than misleading them. The following hypothesis is thus developed.

Hypothesis (2): Ceteris paribus, there is a significant negative association between real earnings management and information asymmetry.

McVay (2006) claims that managers may reclassify expenses or revenue to manage earnings and that, although this does not violate the GAAP, it shows a positive image that does not reflect real business performance. Thus, classification shifting does not require a change in the final reported earnings, but it does involve moving accounts to present a misleading impression of financial information. The classification shifting tool is more difficult for auditors to detect and bears less cost for managers than both accruals and real earnings management (Alfonso et al., 2015). Zalata and Roberts (2015) argue that the classification shifting tool is an ongoing concern that is used by managers. They report empirical evidence from the UK that managers use this tool to inflate core earnings. Another piece of evidence from the UK is provided by Malikov et al. (2018), who report that firms use this tool to inflate operating revenues. They find an increasing trend for this tool post-IFRS, and they suggest that the IFRS provide managers with another tool to manage earnings.

However, there is lack of evidence on the association between the classification shifting tool and information asymmetry. Prior studies document that classification shifting tends to mislead investors (e.g. Haw et al., 2011; Shirato and Nagata, 2012; Behn et al., 2013; Lail et al., 2014; Alfonso et al., 2015; Zalata and Roberts, 2015; Baik et al., 2016; Zalata and Roberts, 2017; Malikov et al., 2018), however, how this tool influences information asymmetry remains the unanswered question in the literature. Alfonso et al. (2015) report that investors overprice core earnings for shifters firms and these investors do not recognise the opportunistic behaviour through this tool. It is more probable that managers intend to use it to influence information asymmetry. Therefore, the following hypothesis is developed:

Hypothesis (3): Ceteris paribus, there is a significant association between classification shifting and information asymmetry.

Firms tend to disclose the projections of their financial results that relate to the upcoming quarter or fiscal year, however, whether this practice has any impact on stock price valuation, liquidity and volatility is still debatable (Han, 2013). Diamond and Verrecchia (1991) provide a theoretical explanation that public disclosures lead to a reduction in information asymmetry and increase firms' stock liquidity. The managerial guidance tool is used to hit analyst forecasts as managers have the ability to time their guidance before the actual reported earnings are announced (Hirst et al., 2008). However, whether it is beneficial to release accounting information to the capital markets has been the focus of significant academic interest (Lee, 2009). Managers use managerial guidance to avoid reporting negative surprises. Firms' stock prices more likely to be affected with earnings announcements. More generally, managers use this tool if they believe that analyst forecasts are expected to be overly optimistic (Matsumoto, 2002). Firms attempt to hit analyst forecasts because the market rewards them with positive returns when they meet these targets (Kasznik and McNicholos, 2002). Thus, these firms are pushed to meet or beat analyst estimates in order to avoid the punishment of missing analyst expectations (Bartov et al., 2002; Lopez and Rees, 2002). However, investors are fooled and misguided by managers via managerial opportunistic practices and this leads these investors to be cautious and compare analyst estimates with reported actual earnings.

Further, Matsumoto (2002) argues that guiding analysts' forecasts is not limited to public disclosures that are provided by management but is also achieved through private and informal information. Hu et al. (2014) find that information asymmetry is reduced for firms that ceased use of the managerial guidance tool. They suggest that this improvement could be related to the behaviour of these firms, as these firms are less likely to engage in aggressive earnings management after stopping guidance. Other studies have also found a positive impact on firms' performance, analyst forecast dispersion and analyst forecast accuracy for firms that ceased managerial guidance (e.g. Houston et al., 2010; Chen et al., 2011). Managers may allow some of the bad news to be leaked to the market to avoid negative earnings surprises. However, the market reaction to this bad news seems to be less costly for firms (Kross et al., 2011). Bartov et al. (2002) and Chan et al. (2007) document that the effect of releasing the bad news is much lower than earnings surprises at the announcement date.

However, most prior studies (e.g. Bartov et al., 2002; Matsumoto, 2002; Cotter et al., 2006; Lin et al., 2006; Athanasakou et al., 2009; Athanasakou et al., 2011; Ng et al., 2012; Firth et al., 2013; Li and Yang, 2016; Rhee et al., 2016) have focused on the use of managerial guidance to meet or beat analyst forecasts. Hu et al. (2014) claim that managers can increase information asymmetry through use of the managerial guidance tool if they intend to meet their guidance numbers by issuing voluntary accounting information to influence market expectations. Therefore, if the managerial guidance tool is used to mislead users, then this would be expected to increase information asymmetry. This supports agency theory's theoretical base, which suggests that managers use opportunistic managerial practices to mislead users of accounting information**.** On the contrary, if managers in the UK employ this tool to inform users, then it is more likely to reduce information asymmetry. This is consistent with signalling theory, which predicts that managers employ managerial guidance to convey private accounting information to users as a signal to improve firm value. Thus, under these two situations, it is difficult to determine the exact direction in regards to whether managers use managerial guidance to mislead or inform market users. Hence, the following hypothesis is developed:

Hypothesis (4): Ceteris paribus, there is a significant association between managerial guidance and information asymmetry.

6.3 Methodology and Sample Selection

6.3.1 Information asymmetry proxy

This study uses the average percentage quoted spread ($\text{Spread}_{i,t}$), which was developed by Callahan et al. (1997). It is calculated on an annual basis as (ask price − bid price) / [(ask price + bid price)/2]. The bid-ask spread proxy is widely used in the current literature to measure information asymmetry (e.g. Menyah and Paudyal, 2000; Cai et al., 2004; Gregoriou et al., 2005; Cormier et al., 2013; Ajina et al., 2015; Jafari Seresht et al., 2015). Coller and Yohn (1997) find that when the level of information asymmetry is high, it is more likely that the spread between bid and ask will increase. Kim and Verrecchia (1994) report that if the spread is increased at the time of an earnings announcement, then it indicates that information asymmetry is high. It has been reported that if firms attempt to reduce the gap between bid and ask, then they need to disclose

more information to outsiders to reduce asymmetric information (Lev, 1988). Thus, this proxy is used to measure information asymmetry.

6.3.2 Managerial tools measures

The measures of abnormality for working capital accruals ($AWCA_{i,t}$), real earnings activities ($ACFO_{i,t}$, $APROD_{i,t}$, $ASGA_{i,t}$), classification shifting ($ACS_{i,t}$) and unexpected managerial guidance ($UEF_{i,t}$) have been outlined in detail in chapter 4, section 4.3.1. These measures are used to examine whether there is any relationship between these managerial measures and information symmetry proxy.

6.3.3 Panel regression model

The researcher in this thesis employs panel data models, and panel data combines both cross-sectional and time-series data (Schulman et al., 1996). There are some advantages in using panel data compared with time-series or cross-sectional data. Through combining cross-sectional data with time-series data, panel data provides more variability for the sample used in a study, and a high degree of freedom due to a large number of observations. It has an essential role in reducing the collinearity problem, which may violate one of the OLS assumptions. It is vital to improving the efficiency of the estimators produced by the model (Hsiao, 2007).

Furthermore, it is common in some cases for a researcher to omit significant variables that are correlated with independent variables, which in the end affects the model's specification. The omitted variables cause the inference to be biased (Hsiao, 2007). However, one significant advantage of panel data studies is the ability to control the effect of omitted variables or unobservable variables. The techniques of panel data allow individual specific variables to take account of the heterogeneity problem, as it is known that the omission of variables correlated with explanatory variables causes the coefficients of leased square regression to be biased (Chamberlain, 1978). Furthermore, some argue that the typical shape of data is non-stationary and that this affects the assumption of normality distribution, but this is not the case with panel data because panel data study requires a large number of observations over time (Binder et al., 2005).

For the panel data, the researcher checks the appropriateness of the fixed effect model and the random effect model through applying the Hausman test. The choice between each of these models relies on assumptions regarding the existence of a correlation between heterogeneity and the independent variables. For the SPREAD model, the researcher runs the Hausman test, and the results are shown in Table 6-1. The most appropriate model is the fixed effect model. The fixed effect model is commonly used by researchers to deal with correlated omitted variables. The assumption of this model is that firm and time are correlated with the key independent variables.

Table 6-1: ***Result of Hausman test for panel model***

Regression Model	Parameter	Fixed versus Random	Null hypothesis	Appropriateness
SPREAD	$\chi 2$	25.97		
	p	0.010		
	Hypothesis	Ho: difference in coefficients not systematic	Rejected	Fixed effect

6.3.4 Empirical model

The objective of this section is to identify the empirical model that is used to examine the relationship between managerial tools and information asymmetry. This study uses four common managerial tools that are identified in the existing literature, which are working capital accruals, real earnings management, classification shifting and managerial guidance. The following fixed effect model is applied to test this association, which was initially developed by Abad et al. (2016)[22]:

[22] Several diagnostic tests were performed to test the statistical assumptions of the panel model. For the linearity test, the scatterplot was performed between the SPREAD variable against each of the independent variables in the regression model. The results do not show that there is a linearity problem in this study. To test assumption of normality residuals (rstu) were generated of the regression model. However, the results indicate that a normality assumption did not hold. As the sample size is large, with observations of 2,397, the model is still valid and can be used to test the relationship between managerial tools and information asymmetry. The results of both the Breusch-Pagan test and the White test show that the null hypothesis is rejected if the variance of the residual is homogeneous. Therefore, the regression model suffered from a heteroscedasticity problem and to account for heteroscedasticity, a robust standard error is included in the regression model. Please refer to Appendix D for full details for these tests.

$$SPREAD_{i,t_{i,t}} = \alpha_i + \beta_1 AWCA_{i,t} + \beta_2 ACFO_{i,t} + \beta_3 APROD_{i,t} + \beta_4 ASGA_{i,t} + \beta_5 ACS_{i,t} + \beta_6 UEF_{i,t} + \beta_7 SIZE_{i,t} + \beta_8 FLEV_{i,t} + \beta_9 TURNOVER_{i,t} + \beta_{10} GROWTH_{i,t} + \beta_{11} INDPROD_{i,t} + \varepsilon_{i,t} \quad (6.1)$$

There are several control variables used in this study; for instance, firm size ($SIZE_{i,t}$) is used to control for firm performance and is calculated as the natural logarithm of the total assets. Hu et al. (2014) report that larger firms are more heavily monitored by analysts and investors and thus these firms are less likely to engage in managing earnings. The large firms are less likely to engage in managing earnings because these firms tend to have strong internal control systems and competent auditors compared to small firms (Warfield et al., 1995). Furthermore, larger firms are normally audited by large auditing firms and it can easily be detected if these firms engage in earnings management (Francis et al., 1999). Greenstein and Sami (1994) report that shares are traded more frequently for larger firms than smaller firms, and that these firms have lower information asymmetry compared to smaller firms. Therefore, analysts tend to follow these companies more than others. Chae (2005) also supports this, having found that larger firms have a lower level of information asymmetry than smaller firms. Thus, this control variable is used to control the effect of size for the sample.

Financial leverage ($FLEV_{i,t}$) is calculated as the total debt divided by the total equity. Managers sometimes manage earnings to avoid breaching debt covenants. Thus, when information asymmetry is high, it is more likely that firms could manipulate earnings without being discovered; however, if information asymmetry is low, there is a high chance that shareholders will put more pressure on firms (Richardson, 2000). Bharath and Wu (2009) find a positive relationship between information asymmetry and debt finance. Gao and Zhu (2015) document that firms with a high degree of information asymmetry are more attracted to use debt capital and less likely to use long-term debt. They also find that information asymmetry is positively related to a firm's leverage. Therefore, this control variable is used to control the effect of debt issue for the sample selected.

To control for firm growth opportunities, a growth proxy ($GROWTH_{i,t}$) is added to minimise this effect. It is calculated as the market value of equity divided by the book value of equity. Smith and Watts (1992) claim that asymmetric information is positively related to firm growth opportunities. The growth proxy is expected to have a positive sign. Turnover ratio ($TURNOVER_{i,t}$) is used to capture a firm's stock liquidity, as it measures the association between trading volume and the average number of outstanding shares. It is measured as the annual total number of shares traded in a year divided by the average total number of shares outstanding for firm i at year t. This measure is also used by scholars as a proxy for stock liquidity (e.g. Datar et al., 1998; Chordia et al., 2001; Brown et al., 2009; Jayaraman and Milbourn, 2012). Datar et al. (1998) find a significant relationship between stock returns and stock turnover, while Roulstone (2003) reports a positive association between analyst following and liquidity. In a similar vein, Foo (2013) documents that both high stock turnover and higher analyst following lead to a reduction in information asymmetry. Therefore, the sign of this predicted control variable is expected to be positive. Industry dummies (INDD) are used to control for industry differences which cannot be explained by the control variables, while average annual growth in industrial production (INDPORD) is used to control for the impact of macroeconomic conditions, as suggested by Athanasakou et al. (2009).

6.3.5 Sample selection

The sample size used for this study includes 280 firms listed on the FTSE All-Share Index. The data are collected from the Thomson Reuters DataStream and Thomson Reuters I/B/E/S databases. Firms are classified using the Industry Classification Benchmark (ICB) approach into seven industries. The details of data used in this study are discussed further in chapter 4, section 4.3.1. This study also includes annual data related to information asymmetry such as bid-ask prices, trading volume and standard deviation of analyst forecast, which are extracted from Thomson Reuters DataStream.

6.4 Empirical tests and results

This section provides empirical analysis of the relationship between the managerial measures and the information asymmetry proxy. The key measures identified are abnormal working capital accruals (AWCA), abnormal operating cash flow (ACFO), abnormal production costs (APROD), abnormal selling, general and administrative expenses (ASGA), abnormal classification shifting (ACS), and unexpected managerial guidance (UEF).

6.4.1 Descriptive statistics

Table 6-2 represents the descriptive statistics for the key variables used in this study. The mean, median, standard deviation, 25th percentile and 75th percentile are reported for each variable. The mean ratio for bid-ask spread is 0.9%, with a median of 0.2%. This result is consistent with those reported in prior studies that use this information asymmetry proxy (e.g. Chung et al., 1995). This measure is also used by many researchers to proxy for information asymmetry (e.g. Menyah and Paudyal, 2000; Cai et al., 2004; Gregoriou et al., 2005; Cormier et al., 2013; Ajina et al., 2015; Jafari Seresht et al., 2015). The table also indicates that real earnings management measures have high mean ratios, with 11.9%, 83.5% and 30.4% for abnormal operating cash flow (ACFO), abnormal production costs (APROD), and abnormal selling, general and administrative expenses (ASGA), respectively, compared to other managerial tools. This might suggest that real activity manipulation is commonly used in the UK post-IFRS. Financial leverage for the sample shows an average ratio of 51.8%, which may indicate that approximately half of the sample have high financial leverage. This could suggest that these firms are highly motivated to manage earnings in order to avoid breaching debt covenants. Overall, the average size of firms, which is measured by the natural logarithm of total assets, is approximately £13.7 million. This probably indicates that the sample includes small, medium and large firms distributed among seven industries.

6.4.2 Correlation matrices

Table 6-3 reports a summary of correlations between the key variables. This table shows that information asymmetry proxy (SPREAD) is significantly correlated with the real earnings management, classifications shifting and managerial guidance measures. This may indicate that managers are more likely to use these tools to manage private information, which causes the difference between ask and bid to be high. However, abnormal working capital accrual seems to be insignificant in relation to the spread. This result suggests that managers in the UK do not utilise this tool and prefer to use tools that are difficult for auditors or regulators to detect.

Table 6-3 also reports that turnover ratio is negative and statistically significant at 17%. This finding is consistent with both Roulstone (2003) and Foo (2013), who document that a high level of stock turnover ratio leads to a reduction in information asymmetry. However, the size of firms is also negatively correlated with the spread, and the reason for this could be that larger companies are more likely to be followed by analysts. This is consistent with Hu et al. (2014), who report that larger firms are more heavily monitored by analysts and investors, and these firms are less likely to engage in managing earnings. The large firms are less likely to engage in managing earnings because these firms tend to have strong internal control systems and competent auditors compared to small firms (Warfield et al., 1995). Further, the result supports the argument that larger firms are normally audited by large auditing firms and that it can easily be detected if these firms engage in earnings management (Francis et al., 1999).

Table 6-2: Descriptive statistics for the full sample (2005-2015)

Variable	N	Mean	Median	SD	p25	p75
Panel A: Information asymmetry proxy						
SPREAD	2966	0.009	0.002	0.015	0.001	0.008
Panel B: Managerial measures						
AWCA	2686	0.007	0.004	0.035	-0.010	0.020
ACFO	2686	-0.119	-0.110	0.080	-0154	-0.071
APROD	2634	-0.835	-0.665	0.705	-1.087	-0.341
ASGA	2686	-0.304	-0.275	0.186	-0.395	-0.178
ACS	2625	0.082	0.069	0.094	0.041	0.115
UEF	2406	0.038	0.019	0.231	-0.007	0.060
Panel C: Control variables						
FLEV	2966	0.518	0.513	0.216	0.382	0.630
TURNOVER	2966	0.984	0.690	0.964	0.398	1.212
GROWTH	2966	3.125	2.260	6.772	1.350	3.840
SIZE	2966	13.749	13.620	1.691	12.590	14.789
INDPRO	2966	-0.001	0.009	0.024	-0.012	0.014

This table summarises the descriptive statistics of each variable that are used in the SPREAD model. SPREAD represents bid-ask spread, which is measured as (ask price − bid price) / [(ask price + bid price)/2]. This measure is used to proxy for information asymmetry. The 25% quartile indicates the value of the 25th percentile of the frequency distribution and the 75% quartile is the third quarter of the frequency distribution. For variable descriptions, please refer to Appendix A.

Table 6-3: Correlation matrices for the key variables

Variable	SPREAD	AWCA	ACFO	APROD	ASGA	ACS	UEF	FLEV	TURNOVER	GROWTH	SIZE
AWCA	-0.0203										
ACFO	0.1126***	0.0426**									
APROD	-0.0953***	-0.0462**	0.0312								
ASGA	-0.1445***	-0.0523***	0.4987***	0.2894***							
ACS	-0.1875***	0.0593***	0.3667***	-0.2919***	-0.0344*						
UEF	-0.0722***	0.0958***	0.1115***	-0.0222	-0.0194	0.0366*					
FLEV	0.0149	-0.0781***	-0.0188	0.2942***	0.0917***	-0.1689***	-0.0533***				
TURNOVER	-0.1658***	-0.0605***	-0.0189	-0.0152	-0.11***	-0.0009	-0.0846***	0.1357***			
GROWTH	-0.0734***	0.0646***	0.2517***	0.0648***	0.2437***	0.1414***	0.0547***	-0.0024	0.0101		
SIZE	-0.4298***	-0.0532***	-0.1472***	-0.1462***	-0.5456***	0.1769***	0.1335***	0.0615***	0.1748***	-0.0444**	
INDPROD	-0.0345*	0.0674***	-0.0097	0.0264	0.0281	0.0453**	0.1546***	-0.0198	-0.0883***	0.1081***	0.0058

*: significant at 10% level; **: significant at 5% level; ***: significant at 1% level. This table reports pairwise correlation coefficients between the measures used in this study. Correlation identified between bid-ask spread and managerial measures. Correlation significant is shown with stars. For variable descriptions, please refer to Appendix A.

6.4.3 The main analysis

6.4.3.1 Analysis of the association between information symmetry and managerial measures

Table 6-4 reports the coefficients for the fixed effect model.[23] The table reports that real earnings management is used to manage earnings using cash flow from operating (CFO), and selling, general and administration expenses (SGA). The evidence shows that the abnormality of both these activities is positive and statistically significant with bid-ask spread (SPREAD). This finding might indicate that real earnings management is used to mislead users, in which case it leads to an increase in the level of information asymmetry. The results of this thesis are consistent with agency theory, which predicts that managers use opportunistic practices to mislead users of accounting information and that this is more likely to lead to an increase in information asymmetry. Managers probably use this managerial practice to avoid market reactions, which could cause severe consequences for stock prices if the actual results were released. Abad et al. (2017) report a positive relationship between real earnings measures and the information asymmetry proxy. They claim that this result is due to the nature of the Spanish market in which their study was conducted. The Spanish market has characteristics of weak investor protection, low accounting quality and a poor liquidity stock market. In contrast, the UK stock market is considered to be active, and investors have strong protection rules (Iatridis, 2010). Therefore, the results of this study imply that managers are highly motivated to use this tool to avoid disclosing private information in the market. In spite of the fact that real earnings management could cause a firm's value to decline (e.g. Roychowdhury, 2006; Bhojraj et al., 2009; Cohen and Zarowin, 2010; Kim and Sohn, 2013), managers continue utilising this tool post-IFRS.

However, the IFRS might also have contributed to this change because managerial choices are constrained by these standards. Thus, these standards might encourage managers to use the real earnings management tool. The results of this study are inconsistent with prior studies (Leuz and Verrecchia,

[23] Together, the random and the fixed models provide similar findings. However, the focus of this study is on the fixed effect model as suggested by the Hausman test, in which the null hypotheses is not rejected (0.0025).

2000; Abad et al., 2017; Turki et al., 2017) which claim that international standards appear to reduce levels of information asymmetry. The results, however, support prior studies which suggest that these standards do not improve accounting quality and could increase use of opportunistic managerial tools (e.g. Daske et al., 2008; Jeanjean and Stolowy, 2008; Ahmed et al., 2013; Daske et al., 2013; Doukakis, 2014; Christensen et al., 2015; Capkun et al., 2016; Zalata and Roberts, 2017; Malikov et al., 2018). Therefore, the current study's finding is consistent with this study's hypothesis that there is a significant association between real activity manipulation and information asymmetry.

Furthermore, the results show weak evidence to suggest a positive relationship between accrual earnings management and information asymmetry. This implies that managers avoid using this tool as it is easy for it to be detected by investors (Cormier et al., 2013). Prior studies do not support the suggestion that accrual earnings management was a common practice in the UK pre-IFRS (e.g. Athanasakou et al., 2009: Athanasakou et al., 2011). There is weak evidence to suggest a significant relationship between use of the classification shifting tool and information asymmetry. This is because classification shifting affects the credibility of financial reporting as investors are misled and this behaviour can be discovered over the following year, and firms will thus generate negative future abnormal returns (Haw et al., 2011). Alfonso et al. (2015) support the previous argument and document that shifters suffer from negative future returns compared to non-shifters. The results further provide weak evidence to support a significant association between managerial guidance and information asymmetry. Hu et al. (2014) claim that information asymmetry can be reduced when firms cease to use managerial guidance. They suggest that these firms are less likely to engage in aggressive earnings management after stopping guidance. Thus, there is no evidence to support the developed hypotheses that these three tools can be used to influence information symmetry in the UK market. This may suggest that managers only prefer to utilise real earnings management to influence the level of information asymmetry.

In relation to some of the control variables in Model (1) of Table 6-4, the sign of financial leverage (FLEV) is positive and statistically significant. Thus, when information asymmetry is high, it is more likely that firms will manage earnings to avoid breaching debt covenants. The results of this study support Bharath and Wu's (2009) and Gao and Zhu's (2015) findings concerning debt leverage. They document a positive relationship between information asymmetry and debt finance. The table also reports a negative relationship between information asymmetry and stock turnover volume (TURNOVER), but it is not statistically significant. Finally, the sign of the size coefficient is negative as predicted and according to the existing literature, in which larger firms are followed by more analysts (Hu et al., 2014).

Table 6-4: Coefficients for the fixed-effect model for the bid-ask spread

Variable	Fixed -Effect Model Coefficient (t-stat)	Random-Effect Model Coefficient (t-stat)
	(1)	(2)
Intercept	0.0649***	0.0631***
	(5.74)	(9.94)
AWCA	0.0011	-0.0017
	(0.14)	(-0.23)
ACFO	0.0114**	0.0171***
	(2.27)	(3.71)
APROD	0.0003	-0.00006
	(0.25)	(-0.08)
ASGA	0.0056*	0.0047*
	(1.75)	(1.76)
ACS	-0.0018	-0.0039
	(-0.45)	(-1.3)
UEF	0.0006	0.0005
	(0.85)	(0.8)
FLEV	0.0078***	0.0051**
	(2.62)	(2.4)
TURNOVER	-0.0005	-0.0009**
	(-1.18)	(-2.46)
GROWTH	-0.00003	-0.0001*
	(-0.88)	(-1.87)
SIZE	-0.0042***	-0.0039***
	(-5.1)	(-9.16)
INDPROD	-0.03081***	-0.0327***
	(-3.68)	(-3.87)
Industry dummy		Yes
N	2,397	2,397
R-sq	0.2017	0.2210
p-value	<0.001	<0.001

*: significant at 10% level; **: significant at 5% level; ***: significant at 1% level. This table summarises the estimated parameters for earnings management regressions using fixed effect and random effect models for the entire sample size across all industries and years. This table reports regression results coefficients and t-statistics (in brackets) based on robust standard errors, clustered by firm level. SPREAD is the proxy used to measure information asymmetry, and it is measured as (ask price − bid price) / [(ask price + bid price)/2]. Variables are winsorized at 1% and 99% of their distribution. For variable descriptions, please refer to Appendix A.

6.4.3.2 Graphical evidence of suspect firm sample

The objective of this analysis is to identify the suspect firms graphically. The argument that can be made is that firms face certain difficulties in regards to maintaining consistent earnings. Therefore, to avoid surprising the market with a sudden decline in earnings, firms tend to utilise earnings management practices. In contrast, in the absence of earnings management, earning distribution is supposed to be symmetric, but this case is not under the earnings management situation. In other words, suspect firms are expected to deviate from normal earnings distribution.

Burgstahler and Dichev (1997) and Roychowdhury (2006) both suggest that suspect firms fall within the interval of greater than or equal to zero but less than 0.005, with an assumption that the width of each interval is considered to be 0.005. Firms avoid falling into the trap and reporting negative earnings, which might have a negative impact on their reported earnings. A significant amount of empirical evidence supports this approach (e.g. Dichev and Skinner, 2002; Leuz et al., 2003; Roychowdhury, 2006; Myers et al., 2007: Li, 2014; Burgstahler and Chuk, 2015; Burgstahler and Chuk, 2017). The researcher of this study follows the same approach to identify the suspect firms in the sample size. The income before extraordinary items and preferred dividends scaled by lagged of total assets (IBEI) is used as a benchmark. Therefore, IBEIs have been divided into intervals with widths of 0.005 for the range of -0.10 to +0.20.[24] The result is shown graphically in Figure 6-1.

From the histogram, there is an irregularity near zero with unusual frequency distribution below zero and unusually high frequencies just above zero. Roychowdhury (2006) and Zang (2012) document that earnings management is more likely to occur just above zero. There are 51 suspect firm-years of the total of 2,914, which represents approximately 2% of the entire sample. Therefore, the results obtained in this study are consistent with those of previous studies; for instance, using US data Roychowdhury (2006) finds around 2% of the sample to be suspect, while Zang (2012) documents 3% of the firm-year to be suspect.

[24] The histogram is drawn after eliminating extreme values above +0.20 and below -0.10 to focus on the area of suspected firm-year on the histogram.

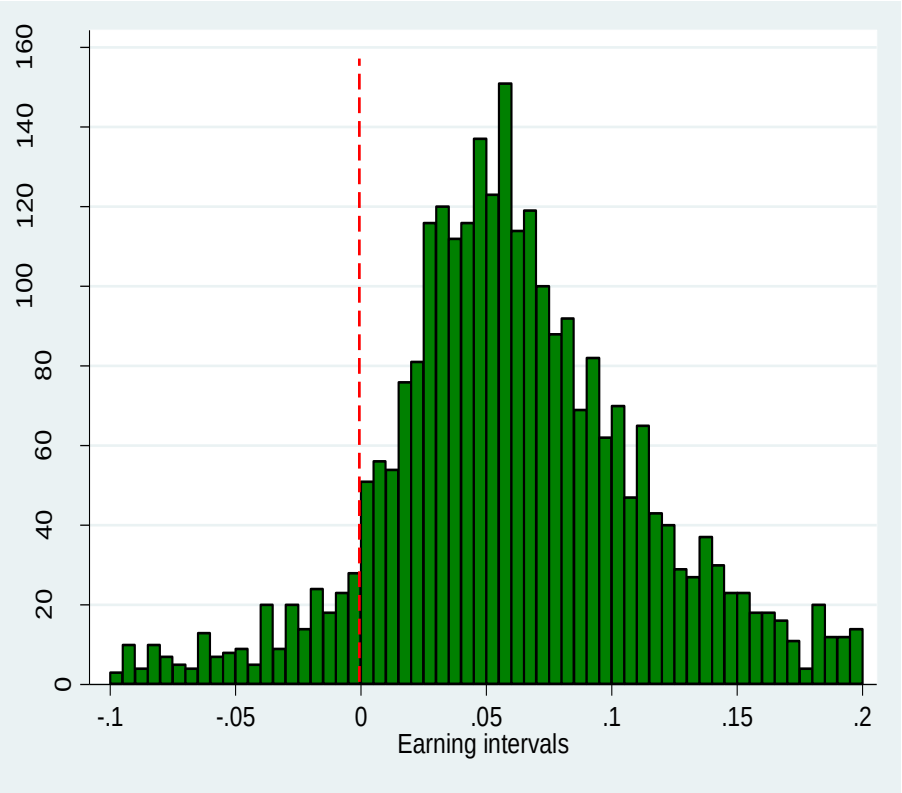


Figure 6-1: Distribution of annual earnings scaled by total assets

Number of firm-years by earnings interval for 3,194 firm-years over the period 2005 to 2015 Firm-years are classified into earnings intervals with a width of 0.005, where earnings are defined as income before extraordinary items scaled by total assets.

6.4.3.3 Analysis of the suspect and non-suspect samples

This section extends the previous investigation and specifically examines whether there is any association between information asymmetry and real earnings activities for the suspect sample. To test this, the sample is divided into two subsamples: i) suspect sample is the suspect firm-year that falls within the interval of greater than or equal to zero, but less than 0.005 (Burgstahler and Dichev, 1997; Roychowdhury, 2006), and ii) the non-suspect sample is the remaining firms that are not supposed to engage in earnings management.

The suspect sample is firms that are expected to engage in managing earnings, while the non-suspect sample is firms that do not have motivations to engage in such practices. The results are shown in Table 6-5 in Panel A for the suspect firms and Panel B for the non-suspect firms. Abnormal selling, general and administration expenses (ASGA) are positive and significant for both suspect sample and non-suspect sample. This is consistent with the hypothesis

that managerial opportunism creates information asymmetry in the market. This implies that managers are highly motivated to use selling, general and administrative expenses to influence information asymmetry. This finding is consistent with Abad et al. (2016), who found a positive relationship between real earnings activities and asymmetric information. They suggest that real activities manipulation enhances private information in the stock market. On the other hand, the results of the suspect sample show that the coefficient of abnormal operating cash flows (ACFO) is negative and insignificant, whereas for the non-suspect sample it is positive and statistically significant. This indicates that managers in the suspect sample use this real earnings activity to disclose private information externally as an attempt to reduce the gap between informed and uninformed investors. However, abnormal production costs (APROD) are not statistically significant for both suspect sample and non-suspect sample. This suggests that this activity is not utilised in the UK post-IFRS.

Another notable finding is related to the size of firms, which is positively associated with the spread of suspect firms but negatively associated with the non-suspect sample. Another notable finding is related to the size of firms, which is positively associated with the spread of suspect firms but negatively associated with the non-suspect sample. This outcome could suggest that suspect firms might belong to small or medium-sized firms. The large firms are less likely to engage in managing earnings because these firms tend to have strong internal control systems and competent auditors compared to small firms (Warfield et al., 1995). Thus, suspect firms are highly incentivised to use real earnings management because investors and analysts are unlikely to monitor these firms. Finally, other control variables such as financial leverage (FLEV) and stock turnover volume (TURNOVER) have similar results as obtained previously.

Table 6-5: Information asymmetry and REM proxies for the suspect and non-suspect samples

Panel A: Suspect sample of REM measures			
Variable	(1)	(2)	(3)
Intercept	-0.5646***	-0.6570***	-0.6336***
	(-2.79)	(-3.16)	(-4.17)
ACFO	-0.0362		
	(-1.62)		
APROD		-0.0132	
		(-1.63)	
ASGA			0.0456**
			(2.43)
FLEV	0.4043***	0.4314***	0.3496***
	(3.95)	(4.45)	(4.20)
TURNOVER	-0.0076*	-0.0106**	-0.0135**
	(-1.81)	(-2.29)	(-2.17)
GROWTH	-0.0181***	-0.0188***	-0.0132***
	(-0.88)	(-5.67)	(-3.00)
SIZE	0.0270**	0.0323***	0.0348***
	(2.50)	(2.83)	(4.19)
INDPROD	0.2279***	0.1953***	0.1114
	(5.44)	(5.19)	(0.88)
N	45	45	45
R-sq	0.0481	0.0477	0.0612
p-value	<0.001	<0.001	<0.001
Panel B: Non-suspect sample for REM measures			
Variable	(1)	(2)	(3)
Intercept	0.0943***	0.0752***	0.0961***
	(6.45)	(7.51)	(6.68)
ACFO	0.0171***		
	(3.55)		
APROD		0.00005	
		(0.00)	
ASGA			0.0082***
			(2.80)
FLEV	0.0066**	0.0077***	0.0078***
	(2.38)	(2.69)	(2.86)
TURNOVER	-0.0005	-0.0004**	-0.0006*
	(-1.47)	(-1.18)	(-1.76)
GROWTH	-0.00006	-0.00002	-0.00002
	(-0.88)	(-0.27)	(-0.48)
SIZE	-0.0063***	-0.0051***	-0.0065***
	(-6.26)	(-7.21)	(-6.35)
INDPROD	-0.0279***	-0.0248***	-0.0262
	(-3.35)	(-3.09)	(-3.16)
N	2,641	2,598	2,641
R-sq	0.2007	0.1815	0.1937
p-value	<0.001	<0.001	<0.001

*: significant at 10% level; **: significant at 5% level; ***: significant at 1% level. This table summarises the estimated parameters for SPREAD regressions using the fixed effect model for two subsamples: suspect and non-suspect across all industries and years. This table reports regression results coefficients and t-statistics (in brackets) based on robust standard errors, which are clustered by firm level. Variables are winsorized at 1% and 99% of their distribution. For variable descriptions, please refer to Appendix A.

6.5 Endogeneity Problem

The previous finding shows that managers in the UK engage in real earnings management to mislead investors, and this practice leads to an increase in the level of information asymmetry among investors in the security market. The controlling variables that are used previously in the model are aimed at ensuring that this positive relationship between information asymmetry and real earnings management is not affected by other factors. However, the presence of information asymmetry might be because of other strong managerial incentives. In other words, there are other determinants that cause managers to employ these managerial tools. This might create an endogeneity problem between information asymmetry and the examined managerial tool (Richardson, 2000). Therefore, in order to check this endogeneity problem, this study follows Rahman et al.'s (2013) approach, in which managerial measures in equation (6-1) are all replaced with the lagged of these measures. The results in Table 6-6 show that the coefficient of lagged of real earnings management for both abnormal cash flows from operations and abnormal selling, general and administrative expense are positive, but ASGA is statistically significant. Therefore, the endogeneity problem is rejected, and this leads to the conclusion that that earnings management is a determinant of information asymmetry.

Table 6-6: Coefficients for the fixed-effect model for lagged of managerial tools

Variable	Fixed -Effect Model Coefficient (t-stat)
Intercept	0.0736***
	(4.62)
LagAWCA	0.0034
	(0.48)
LagACFO	0.0042
	(0.63)
LagAPROD	-0.0017
	(-1.30)
LagASGA	0.0093***
	(2.69)
LagACS	-0.0076
	(-1.41)
LagUEF	-0.0011
	(-0.90)
FLEV	0.0098***
	(2.67)
TURNOVER	-0.0004
	(-0.87)
GROWTH	-0.00005
	(-1.148)
SIZE	-0.0049***
	(4.20)
INDPROD	-0.0220**
	(-2.26)
N	2,118
R-sq	0.1952
p-value	<0.001

*: significant at 10% level; **: significant at 5% level; ***: significant at 1% level. This table summarises the estimated parameters for lagged of managerial tools' regressions using the fixed effect model for the entire sample size across all industries and years. This table reports regression results coefficients and t-statistics (in brackets) based on robust standard errors, which are clustered by firm level. SPREAD is the proxy used to measure information asymmetry, and it is measured as (ask price − bid price) / [(ask price + bid price)/2]. Variables are winsorized at 1% and 99% of their distribution. For variable descriptions, please refer to Appendix A.

6.6 Robustness Check

In this section, the researcher conducts two additional tests to measure the robustness of the empirical findings. In prior tests, the researcher used selling, general and administration expenses (ASGA) as the main real activities manipulation proxy. However, several previous studies (e.g. Beatty et al., 2002; Dichev and Skinner, 2002; Leuz et al., 2003; Phillips et al., 2003; Kothari et al., 2005; Roychowdhury, 2006; Cohen et al., 2008; Bhojraj et al., 2009; Abad et al., 2016) report that earnings could also be managed using discretionary expenses (ADISCEX).[25] These expenses are the aggregation of both research and development costs (R&D) and selling, general and administration expenses (SGA). Therefore, the model is re-estimated by replacing the proxy of ASGA with the ADISCEX proxy. The results are reported in Table 6-7, and show that abnormality of both cash flows from operating and discretionary expenses is positive and statistically significant with the bid-ask spread. Thus, the regression results obtained by this method are robust to the previous findings and consistent with the fixed model tested earlier.

Furthermore, prior studies show that the spread is positively related to analyst forecasts dispersion (e.g. Gregoriou et al., 2005; Kanagaretnam et al., 2005). Analysts often incorporate some important information for investors that is used to make investment decisions (Chung at al., 1995). Brown and Han (1992) claim that analysts may be able to influence information asymmetry if they predict future firm performance more accurately. However, Kanagaretnam et al. (2005) suggest that when there is high divergence of beliefs among investors about firms' earnings, this creates high trading volume in the market and causes dispersion in earnings forecasts to be high. In the same vein, Gregoriou et al. (2005) claim that disagreement amongst investors causes the spread between ask and bid to increase, because other investors need to protect themselves from traders who have more private information. Chen et al. (2011) examine firms that have stopped providing earnings guidance. They find that these firms experienced poor prior performance, operate in an uncertain environment and have fewer informed investors. They also report that these

[25] The discretionary expense measure of real earnings management is used for a robust test. A full discussion on how to derive this variable is explained in the appendix E.

firms showed an increase in analyst forecast dispersion and their forecast accuracy decreased after guidance cessation. Thus, the researcher re-estimated the previous regression (6.4) using analyst dispersion forecast ($DISP_{i,t}$) as a control variable to test whether the relationship between information asymmetry proxy and managerial tools still holds after this inclusion. This variable is calculated as the standard deviation of the latest I/B/E/S consensus earnings per share prior to earnings announcement. The results are shown in Table 6-8, and show that there is a positive association between the spread and analyst forecast dispersion, but this relationship is not significant. However, both cash flow from operating (CFO) and selling, general and administration expenses (SGA) are positive and significant and correlated with information asymmetry proxy. Thus, the regression results obtained are robust and consistent with the previous findings.

Table 6-7: Coefficients for the fixed-effect model for the bid-ask spread

Variable	Fixed -Effect Model Coefficient (t-stat)	Random-Effect Model Coefficient (t-stat)
	(1)	(2)
Intercept	0.0749***	0.06704***
	(6.21)	(9.08)
AWCA	0.0012	-0.0020
	(0.15)	(-0.27)
ACFO	0.0091**	-.0153***
	(2.13)	(3.73)
APROD	-0.0002	-0.0008
	(-0.12)	(-0.99)
ADISCEX	0.0128***	0.0092**
	(2.62)	(2.42)
ACS	-0.0021	-0.0045
	(-0.55)	(-1.53)
UEF	0.0004	0.0004
	(0.68)	(0.63)
FLEV	0.0086***	0.0055***
	(2.96)	(2.61)
TURNOVER	-0.0005	-0.0008**
	(-1.18)	(-2.45)
GROWTH	-0.00003	-0.00006*
	(-0.77)	(-1.79)
Size	-0.0048***	-0.0041***
	(-5.77)	(-8.55)
INDPROD	-0.0282***	-0.0313***
	(-3.29)	(-3.65)
Industry dummy		Yes
N	2,397	2,397
R-sq	0.2002	0.2206
p-value	<0.001	<0.001

*: significant at 10% level; **: significant at 5% level; ***: significant at 1% level. This table summarises the estimated parameters for earnings management regressions using the fixed effect and the random effect models for the entire sample size across all industries and years. This table reports regression results coefficients and t-statistics (in brackets) based on robust standard errors, which are clustered by firm level. SPREAD is the proxy used to measure information asymmetry, and it is measured as (ask price − bid price) / [(ask price + bid price)/2]. Variables are winsorized at 1% and 99% of their distribution. For variable descriptions, please refer to Appendix A.

Table 6-8: Coefficients for the fixed-effect model with analyst dispersion forecasts

Variable	Fixed -Effect Model Coefficient (t-stat)	Random-Effect Model Coefficient (z-stat)
	(1)	(2)
Intercept	0.0650***	0.0634***
	(5.71)	(9.97)
AWCA	0.0011	-0.0017
	(0.14)	(-0.22)
ACFO	0.0114**	0.0170***
	(2.26)	(3.69)
APROD	0.0003	-0.00008
	(0.25)	(-0.11)
ASGA	0.0056*	0.0047*
	(1.75)	(1.79)
ACE	-0.0018	-0.0038
	(-0.45)	(-1.28)
UEF	0.0005	0.0005
	(0.81)	(0.69)
FLEV	0.0078***	0.0051**
	(2.62)	(2.38)
TURNOVER	-0.0005	-0.0009**
	(-1.18)	(-2.48)
GROWTH	-0.00003	-0.000061*
	(-0.88)	(-1.89)
SIZE	-0.0042***	-0.0039***
	(-5.07)	(-9.22)
INDPROD	-0.0308***	-0.0324***
	(-3.66)	(-3.82)
DISP	0.0004	0.0028
	(0.10)	(0.64)
Industry dummy		Yes
N	2,397	2,397
R-sq	0.2018	0.2213
p-value	<0.001	<0.001

*: significant at 10% level; **: significant at 5% level; ***: significant at 1% level. This table summarises the estimated parameters for earnings management regressions using fixed effect and random effect models for the entire sample size across all industries and years. This table reports regression results coefficients and t-statistics (in brackets) based on robust standard errors, which are clustered by firm level. SPREAD is the proxy used to measure information asymmetry, and it is measured as (ask price − bid price) / [(ask price + bid price)/2]. Variables are winsorized at 1% and 99% of their distribution. For variable descriptions, please refer to Appendix A. DISP is the standard deviation of the latest I/B/E/S consensus earnings per share prior to earnings announcement.

6.7 Conclusion and Suggestions for Further Research

This study has used recent data to investigate the association between four managerial tools and information asymmetry in the UK. The evidence shows that abnormality of both cash flow from operating and selling, general and administration expenses activities is positive and statistically significant with the bid-ask spread. This finding indicates that real earnings management is used opportunistically to mislead investors, which leads to an increase in information asymmetry level. This is consistent with Abad et al. (2017), who report a positive relationship between real earnings measures and the information asymmetry proxy. Managers probably use this managerial practice to avoid market reactions, which could cause severe consequences to stock prices if the actual results were released. In spite of the fact that the UK stock market is considered to be active, and investors have strong protection rules (Iatridis, 2010), managers use the real earnings management tool, which leads to an increase in information asymmetry among investors. This result is inconsistent with existing literature that shows that managers use the informative perspective to convey private information that is beneficial for stakeholders (Holthausen, 1990; Watts and Zimmerman, 1990; Healy and Palepu, 1993; Subramanyam, 1996; Fields et al., 2001; Arya et al., 2003; Louis and Robinson, 2005; Jiraporn et al., 2008; Siregar and Utama, 2008; Rahman et al., 2013). Furthermore, there is weak evidence to support any relationship between accrual earnings management, classification shifting and managerial guidance, and information asymmetry.

However, when the sample is divided into the suspect and non-suspect samples, there are two main exciting results. For the suspect sample, the results show that the coefficient of abnormal operating cash flow is negative and insignificant whereas, for the non-suspect sample, the finding still shows positive as and statistically significant. That is, the reported findings might indicate that suspect firms use this real earnings activity to disclose private information externally as an attempt to reduce the gap between informed and uninformed investors. In contrast, for the suspect sample and the non-suspect firms, the positive relationship between abnormal selling, general and administration expenses and information asymmetry still holds. In other words, managers in the UK might use this real earnings activity to mislead investors

and avoid disclosing private information externally. Moreover, this study documents that firm size is positively associated with the spread of suspect firms, while it is negatively associated with the non-suspect sample. This outcome could suggest that suspect firms might belong to small or medium-sized firms. The large firms, however, are less likely to engage in managing earnings because these firms tend to have strong internal control systems and competent auditors compared to small firms (Warfield et al., 1995). Thus, suspect firms are highly incentivised to use real earnings management because investors and analysts are unlikely to monitor these firms.

Overall, the results of this study are consistent with the theoretical base of agency theory. The theory predicts that managers use opportunistic practices to mislead users of accounting information and that this is more likely to lead to an increase in information asymmetry. Thus, the results of this study seem to support the majority of prior literature, which suggests that managers use real earnings management opportunistically to mislead users (Baber et al., 1991; Dechow and Sloan, 1991; Bushee, 1998; Bens et al., 2003; Roychowdhury, 2006; Oswald and Zarowin, 2007; Cohen et al., 2008; Osma and Young, 2009; Gunny, 2010; Cohen and Zarowin, 2010; Badertscher, 2011; Zang, 2012; Alhadab et al., 2013; Cheng et al., 2016; Tabassum et al., 2015; Cupertino et al., 2015; Kothari et al., 2016). This managerial practice adversely affects information asymmetry among investors. The current research has generated an essential insight into the existing literature, in which managers use the opportunistic approach, which causes asymmetric information to increase in the UK post-IFRS.

Nevertheless, the results provide practical implications for several interested groups such as investors, regulators and external auditors. It is useful for investors because it draws their attention to the methods that managers use to influence information asymmetry in the UK post-IFRS. Therefore, investors should not rely exclusively on financial reporting information in making their investments. For regulators, the current research findings suggest that equity regulators should be scrutinised to ensure that financial information is more transparent and credible. This step would increase investors' confidence and minimise their investment losses. In addition, independent auditors should carry out full substantial testing and assess the risks of getting involved in

earnings manipulation through additional procedures that focus on accounts that have a high probability of manipulations.

However, this study has some limitations and provides avenues for future research. Firstly, to measure the impact of managerial tools on information asymmetry, the researcher used only the average percentage quoted spread measure. In spite of its popularity in the existing literature, both Bharath at al. (2009) and Abad et al. (2016) use the index of market microstructure measures, and they suggest that the use of a composite index is more reliable than the individual measures. They argue that the individual measures could provide inconsistent interpretations. Therefore, this area of research may be of high interest for future investigation, that is, to use the index of market microstructure measures and find out whether the results are still consistent with this study. Secondly, one limitation of this study is that the volatility of share prices was not included as a control variable in the model. This could affect the results generated by the model. There are several studies which document that high information asymmetry is associated with high stock price volatility (e.g. Dierkens, 1991; Shleifer and Vishny, 1997; Krishnaswami and Subramaniam, 1999b; Schwert, 2002). Therefore, risks associated with a security leads to an increase in the level of spread (Karpoff, 1986). In addition to that, increased risk in regards to a security leads to an increase in informed traders and this reflects on the spread between the bid and ask (Kim and Verrecchia, 1994). Thirdly, another flaw is that the sample used is dominated by UK firms. However, this study leaves open an interesting research question as to what extent other European countries would produce similar results. Fourthly, the researcher in this study used the quoted bid-ask spread as a measure of information asymmetry; however, future research could use the relative and effective bid-ask spreads measures and find out whether the results are still consistent with this study.

CHAPTER 7: SUMMARY AND CONCLUSION

7.1 Introduction

Earnings management has received growing attention from an enormous number of scholars (Walker, 2013). Academics have empirically identified various tools that managers are more likely to employ to mask firm performance (e.g. Jones, 1991; Dechow et al., 1995; Matsumoto, 2002; Roychowdhury, 2006; McVay, 2006). However, the attempts to improve the quality of financial reporting through the International Financial Reporting Standards (IFRS) appear to have produced inconsistent results. Therefore, this thesis aimed to identify the tools that are adopted by UK managers in the post-IFRS era. More specifically, this thesis intended to fill three main gaps in the literature.

Firstly, the effect of IFRS on managerial tools has remained controversial in the existing literature. In spite of a large number of prior studies supporting the suggestion that IFRS adoption improves accounting quality, and reduces use of managerial tools (e.g. Barth et al., 2008; Chen et al., 2010; Iatridis, 2010; Chua et al., 2012; Bouchareb et al., 2014; Boumediene et al., 2014; Navarro-García and Madrid-Guijarro, 2014; Müller, 2014), other studies have documented that these standards could lead to an increase in opportunistic managerial practice (e.g. Daske et al., 2008; Jeanjean and Stolowy, 2008; Ahmed et al., 2013; Daske et al., 2013; Doukakis, 2014; Christensen et al., 2015; Capkun et al., 2016; Zalata and Roberts, 2017; Malikov et al., 2018). This thesis has provided additional evidence that UK managers employ real earnings management and managerial guidance to meet or beat analyst forecasts post-IFRS adoption.

Secondly, prior research shows that analysts prefer to maintain their relationship with managers in order to access private information (e.g. Francis and Philbrick, 1993; Dugar and Nathan, 1995; Das et al., 1998; Lim 2001; Chen and Matsumoto, 2006; Mayew, 2008; Gu et al., 2013; Soltes, 2014; Brown et al., 2015). The existing research ignores the fact that firms' objectives are to respond to analyst forecasts (Liu, 2005). Further, recent research focuses on the importance of investigating the association between earnings management and analyst forecasts in order to understand the earnings

game between managers and analysts (Eiler et al., 2016). Thus, this thesis has filled this gap and provided empirical evidence that analysts in the UK react positively only to managerial guidance and do not prefer that managers use other tools to hit their expectations.

Thirdly, the literature shows that there is a relationship between information asymmetry and use of managerial tools (Wiyadi and Sasongko, 2015). However, there is a debate among researchers about the impact of managerial tools on information asymmetry. The majority of prior work supports the argument that managers use these tools opportunistically to mislead users (e.g. Roychowdhury, 2006; McVay, 2006; Lin et al., 2006; Athanasakou et al., 2009 Athanasakou et al., 2011; Nini et al., 2012; Jha, 2013; Doyle et al., 2013; Shu and Chiang, 2014; Fan and Liu, 2017). In contrast, other scholars argue that managers utilise these tools to provide users with private information that could be useful for decision making (e.g. Holthausen, 1990; Watts and Zimmerman, 1990; Healy and Palepu, 1993; Subramanyam, 1996; Fields et al., 2001; Arya et al., 2003; Louis and Robinson, 2005; Jiraporn et al., 2008; Siregar and Utama, 2008; Rahman et al., 2013). This thesis has attempted to provide an intuitive explanation to support the claim of agency theory that managers use real earnings management to mislead investors and avoid releasing private information to external users.

The remainder of this chapter is structured as follows: section 7.2 presents the summary of the empirical results of the thesis. The practical implications of the thesis are presented in section 7.3. The last section highlights the research limitations and areas that could be of interest for future research.

7.2 Summary of Empirical Results

The empirical results of this thesis can be divided into three sections based on the research objectives. These results are also summarised in Table 7.1.

7.2.1 Meeting or beating analyst forecasts and managerial tools

The results show that real earnings management and managerial guidance are utilised by managers in the UK. Initially, the results show a positive and significant association with selling and general and administrative expenses. This finding might indicate that in order to hit analyst forecasts managers tend to lower expenses that are related to selling, general costs and administration. The results appear to be inconsistent with the prior evidence in the UK pre-IFRS. Athanasakou et al. (2011) find no evidence that real earnings could be used to meet or beat analyst forecasts. This significant result in regards to the real earnings management tool might suggest that managers in the UK do not like to use accrual earnings management to meet or beat analyst expectations. This study provides strong support for the hypothesis that the adoption of the IFRS in the UK may encourage managers to use real earnings management, as suggested by Jeanjean and Stolowy (2008), who claim that accounting standards have a limited effect on improving the quality of financial reporting. These standards involve some judgment and use of private information. Hence, managers may use substantial discretion even with IFRS adoption. In addition, there is no evidence to support the suggestion that the IFRS are stronger than the UK GAAP. In fact, IFRS adoption allows for more engagement in managing earnings to meet different targets. This is more likely to support Lin et al.'s (2012) results, who find that switching from the US GAAP to the IFRS increased earnings management practice.

Furthermore, this study provides evidence that there is a positive relationship between meeting or exceeding analyst expectations and use of the managerial guidance tool. It is more likely that UK firms will continue to guide analyst expectations to hit their forecasts. Managers might believe that analyst forecasts are overly optimistic and attempt to avoid surprising the market with unexpected earnings. This is consistent with Li and Yang (2016), who document that IFRS adoption increased market demand for disclosures. This increases managers' incentives to employ the managerial guidance tool.

Managers have the ability to time their guidance before the actual reported earnings are announced (Hirst et al., 2008). Managers might understand that this tool works well in the UK market. It is probable that these firms tend to develop reputations through their guidance (Bhojraj et al., 2012). This is consistent with prior evidence obtained by Athanasakou et al. (2009) and Athanasakou et al. (2011) in the UK pre-IFRS. It appears that managers in the UK context prefer this tool, as this technique does not require management of reported earnings. It also has no hint of unethical behaviour, although it may affect stock prices. More generally, the results are consistent with the hypothesis that there is a positive association between meeting or beating analyst forecast and managerial guidance. This study supports previous research in the UK which suggests that classification shifting is not the recommended tool for managers to use in this context (e.g. Athanasakou et al., 2009; Athanasakou et al., 2011; Zalata and Roberts, 2017). It has been argued that the equity market in the UK does not reward firms that hit analyst targets through use of the classification shifting tool. Thus, firms in the UK avoid using this tool because this strategy might be associated with high costs (Zalata and Roberts, 2017).

In relation to loss-making firms, the current evidence suggests that both real earnings management and managerial guidance are used to hit analyst expectations. This is consistent with prior studies that indicate IFRS adoption increased use of opportunistic managerial tools (e.g. Daske et al., 2008; Jeanjean and Stolowy, 2008; Ahmed et al., 2013; Daske et al., 2013; Doukakis, 2014; Christensen et al., 2015; Capkun et al., 2016; Zalata and Roberts, 2017; Malikov et al., 2018). In this thesis, the researcher has documented that loss-making firms are highly motivated to employ real earnings management and managerial guidance in order to reduce bad reactions to their negative earnings.

The results of this study are consistent with the theoretical base of agency theory, where there is a conflict between principals and agents, or between shareholders and managers. The conflict of goals between these two parties makes it difficult to verify that the management is doing what it is expected to do by the shareholders (Eisenhardt, 1989). Managers engage in various managerial tools to maintain their own interests rather than their shareholders' interests. Earnings management reduces the transparency and reliability of financial statements (Scott, 2009). Thus, managers usually avoid

revealing private information in order to control their private benefits (Nagar et al., 2003). These managers understand that investors use accounting information when they value their stocks. That is, to avoid the risk of negative impact on their stock prices, they intentionally employ earnings management practices (Strobl, 2013). This is because managers are concerned about analyst forecasts and they encourage analysts to revise their forecasts through financial information.

7.2.2 Analyst reactions to managerial tools

The results show that the most common tool used is managerial guidance, which is highly positive and significant. This may indicate that analysts are more likely to react positively when managers provide them with more voluntary accounting information. This is consistent with Tan et al. (2002), who argue that analysts do not adjust their forecasts even with biased managerial guidance, in order to allow managers to meet their forecasts, as long as this relationship is maintained. These analysts are aware of management guidance to downgrade their forecasts and note that they react to this by issuing optimistic forecasts (Tan et al., 2002). Thus, analysts issue more optimistic biased earnings forecasts because they are not penalised for inaccurate forecasts. This allows them to provide biased reports in order to generate more trading activity (Chang and Choi, 2017). The finding is consistent with this study's hypothesis that analysts react positively to use of the managerial guidance tool. However, this study found no evidence for the hypothesis that analysts react to the accrual earnings management, real earnings management or classification shifting tools. This might indicate that analysts in the UK do not prefer managers to use these tools. Therefore, managers could use one or two tools to hit their expectations, but analysts are cautious as they do not want to attract the attention of the regulator or external auditors, which could damage their reputation in the market.

Furthermore, when the interaction variable of sell recommendations is included in the original model, the managerial guidance tool still shows as positive and significant with the explained variable. However, the interaction of sell recommendations is negatively correlated with the analyst reaction proxy. This might suggest that analysts are less likely to issue sell

recommendations for firms that provide them with more guidance. In other words, analysts probably issue more buy recommendations even though these firms attempt to guide their forecasts down. This supports the argument that analysts push these firms to meet their expectations and managers respond to that because they believe that overvalued stocks cause a problem for firms (Fuller and Jensen, 2002). This evidence is consistent with Eiler et al. (2016), who claim that analysts do not prefer to issue sell recommendations for overvalued stocks because analysts think that this behaviour is damaging for their clients. Thus, analysts avoid issuing sell recommendations as managers like to have higher stock prices. More generally, the study's findings are essential as they provide evidence to support prior studies, in which analysts prefer to release favourable reports to maintain relationship with managers and thus access to private information (e.g. Francis and Philbrick, 1993; Dugar and Nathan, 1995; Das et al., 1998; Lim 2001; Chen and Matsumoto, 2006; Mayew, 2008; Gu et al., 2013; Soltes, 2014; Brown et al., 2015), although traditionalists would prefer that the practice of earnings guidance be ceased, and managers should focus on their business activities (Houston et al., 2010). The research shows that firms that have stopped providing guidance showed an increase in analyst forecast dispersion and their forecast accuracy decreased after guidance cessation (Chen et al., 2011). This probably supports the suggestion that analysts like firms to continue guiding them and it allows some of internal information to come out.

Overall, the results of this study are consistent with prospect theory, which was developed by Kahneman and Tversky (1979). This theory explains opportunistic managerial practice in engaging with managerial tools and also explains the behaviour of analysts in reaction to these managerial tools. For instance, Aaron et al. (2014) reveal that prospect theory might explain why managers are incentivised to manage earnings. They suggest that managers attempt to report earnings above the threshold in order to obtain bonuses. That is, managers are risk-averse in decision making, and they tend to avoid the pain (consequences) of missing analyst forecasts. The security market appears to place increased pressure on analysts to build relationships with managers (Behn et al., 2013). Therefore, managers, according to this theory, are risk-averse and might choose irrational decisions to avoid the future consequences of their current decisions.

Further, the results are consistent with prospect theory, in which analysts are irrational. Analysts push firms to meet their expectations because they believe that overvalued stocks cause a problem for firms (Fuller and Jensen, 2002). This is also documented by Eiler et al. (2016), who claim that analysts do not prefer to issue overvalued stocks because analysts think that this behaviour is damaging for their clients. Analysts face a trade-off between providing biased forecasts to maintain good relationships with management and issuing accurate forecasts to maintain a good reputation (Chang and Choi, 2017). This was supported by Ding at al. (2004), who claim that analysts provide irrational forecasts and that these forecasts are influenced by other factors, which in the end leads them to provide earnings estimates that are different from actual earnings. Criticisms of analysts arise because, although they are professionals, they continue to make regular errors in forecasting earnings (Abarbanell and Bernard, 1992). Analysts work in a complex environment and face a variety of different incentives, which leads the rationality of their expectations to be erratic (Löffler, 1998).

7.2.3 Information asymmetry and managerial tools

This study has used recent data to investigate the association between four managerial tools and information asymmetry in the UK. The evidence shows that there is a positive relationship between real earnings management and information asymmetry. More specifically, both cash flow from operating, and selling, general and administration expenses activities are positive and statistically significant with the bid-ask spread proxy of information asymmetry. This finding might indicate that real earnings management is used to mislead users, in which case it leads to an increase in the level of information asymmetry. The results of this thesis are consistent with agency theory, which predicts that managers use opportunistic practices to mislead users of accounting information and that this is more likely to lead to an increase in information asymmetry. Managers probably use this managerial practice to avoid market reactions, which could cause severe consequences to stock prices if the actual results were released. Further, Abad et al. (2017) report a positive relationship between real earnings measures and the information asymmetry proxy. They claim that this result is due to the nature of

the Spanish market in which their study was conducted. The Spanish market has characteristics of weak investor protection, low accounting quality and a poor liquidity stock market. In contrast, the UK stock market is considered to be active, and investors have strong protection rules (Iatridis, 2010). Therefore, the results of this study imply that managers are highly motivated to use this tool to avoid disclosing private information in the market. This is in spite of the fact that real earnings management could cause a firm's value to decline (e.g. Roychowdhury, 2006; Bhojraj et al., 2009; Cohen and Zarowin, 2010; Kim and Sohn, 2013). The current study's finding are inconsistent with this study's hypothesis that there is a negative association between real activity manipulation and information asymmetry. Furthermore, the results do not show any significant association between accrual earnings management, classification shifting or managerial guidance, and information asymmetry. Thus, there is no evidence to support the developed hypothesis that these three tools can be used to influence information symmetry. This may suggest that managers only prefer to utilise real earnings management to influence the level of information asymmetry in the UK market.

However, when the sample is divided into the suspect and non-suspect samples, there are two main exciting results. For the suspect sample, the results show that the coefficient of operating cash flow activity is negative and insignificant, whereas for the non-suspect sample, the finding still shows as positive and statistically significant. That is, the reported findings might indicate that managers in the suspect sample use this real earnings activity to disclose private information externally as an attempt to reduce the gap between informed and uninformed investors. In contrast, for the suspect sample and the non-suspect firms, the positive relationship between abnormal selling, general and administration expenses, and information asymmetry still holds. This is consistent with the hypothesis that managerial opportunism creates information asymmetry in the market. This implies that managers are highly motivated to use selling, general and administration expenses to influence information asymmetry. This finding is consistent with Abad et al. (2016), who found a positive relationship between real earnings activities and asymmetric information. They suggest that real activities manipulation enhances private information in the stock market. Moreover, this study documents that firm size is positively associated with the spread of suspect firms, while it is negatively

associated with the non-suspect sample. This outcome could suggest that suspect firms might be small or medium-sized firms. The large firms are less likely to engage in managing earnings because these firms tend to have strong internal control systems and competent auditors compared to small firms (Warfield et al., 1995). Thus, suspect firms are highly incentivised to use real earnings management because investors and analysts are unlikely to monitor these firms.

Overall, the results of this study are consistent with the theoretical base of agency theory. The theory predicts that managers use opportunistic practices to mislead users of accounting information and that this is more likely to lead to an increase in information asymmetry. Thus, the results of this study seem to support the majority of prior literature that suggests that managers use real earnings management opportunistically to mislead users (Baber et al., 1991; Dechow and Sloan, 1991; Bushee, 1998; Bens et al., 2003; Roychowdhury, 2006; Oswald and Zarowin, 2007; Cohen et al., 2008; Osma and Young, 2009; Gunny, 2010; Cohen and Zarowin, 2010; Badertscher, 2011; Zang, 2012; Alhadab et al., 2013; Cheng et al., 2016; Tabassum et al., 2015; Cupertino et al., 2015; Kothari et al., 2016). This managerial practice adversely affects information asymmetry among investors. The current research has generated an essential insight into the existing literature, in which managers use the opportunistic approach, which causes an increase in the asymmetric information in the UK post-IFRS.

7.3 Research Implications

The results of this thesis provide practical implications for several interested groups such as regulators, investors and external auditors. The results suggest that IFRS adoption does not improve the quality of UK financial reporting. The study documents that managers use the real earnings management and managerial guidance tools to hit analyst forecasts. IFRS implementation in the UK allows the country to adopt a standardised set of rules which increases comparability among countries. However, there is no evidence to support the suggestion that these international standards have increased the transparency and reliability of accounting information compared to the UK GAAP. This study suggests that regulators such as the UK's Financial Reporting Council (FRC) should implement strict supervision to reduce the use of earnings

management and managerial guidance techniques. Companies should be asked to provide full disclosures in order to evaluate and determine how firms mask their actual performance. Equity regulators should be scrutinised to ensure that financial information is more transparent and credible.

This study also documents that analysts are more likely to allow managers to report earnings in line with market predictions in order to maintain their relationship with management. This earnings game is well understood by analysts and large institutional investors. However, small traders bear the losses of this inside game. Thus, it is the responsibility of the regulators to intervene in this game to request firms to publish all earnings guidance and make it available for all investors. They should provide full transparent disclosures, and it is essential to make clear how earnings estimates have been calculated. It is crucial to provide sufficient information to allow investors to judge the objectivity of these measures. Investors need to be cautious when interpreting voluntary accounting disclosures.

Further, the results show that there is a trade-off between managerial tools. However, several accounting scandals occurred because auditors failed to spot and report certain managerial practices. Therefore, it is the responsibility of both internal and external auditors to show a high level of professional scepticism when auditing the financial reporting of their clients. Auditors should perform a sceptical audit, and this requires designing procedures that challenge management assertions. Management has to provide auditors with sufficient evidence to allow auditors to make evidence-based judgments. This is crucial for auditors to conclude that the financial statements are a true and fair view in all material respects (Auditing Practices Board, 2012).

In the UK, provision C.3.1 of the UK Corporate Governance Code requires all listed firms to have an audit committee which includes non-executive directors. One of the committee's duties is to monitor the integrity of the financial reporting (ICAEW, 2018). This committee should be more active, and the FRC should evaluate and review the performance of this committee to ensure that financial statements are presented fairly to external users. This study suggests that external auditors should detect material cases of earnings management and report them to the concerned authority, in order to maintain their integrity and reputations in the eyes of external users. They should review

the expenses that are related to real earnings activities and carry out full substantial testing on these expenses. They also should review the voluntary accounting information that relates to earnings guidance and evaluate the objectivity of these measures to assess the risks of engaging in suspect managerial guidance techniques.

7.4 Research Potential Limitations and Avenue for Future Research

This thesis is subject to some potential limitations and provides interesting avenues for future research. Firstly, the sample used was relatively small due to data limitation and could be subject to sample bias. Therefore, this study could be expanded with a larger sample. Also, the sample size used was dominated by UK firms. It leaves open an interesting research question as to what extent other European Countries would produce similar results.

Secondly, the results of this study indicate that managerial guidance is still used by UK managers following the adoption of IFRS. It raises a question as to why managers continue to guide analyst forecasts, since both pre-IFRS and post-IFRS periods provide similar conclusions. This is another opportunity for future research. This study is conducted using a quantitative approach through applying empirical models. Thus, this research could be conducted using surveys or interviews with top managers. For instance, many existing studies on earnings management are based on Graham et al.'s (2005) significant findings. Graham et al. (2005) distributed a survey to 400 financial executives. They find that eighty per cent of CFOs reported that they were engaged directly in real earnings management through reducing R&D costs, and cutting advertising and maintenance expenses.

Thirdly, to measure analyst reactions to managerial tools, the researcher used the keep or downgrade proxy. However, another area of research which may be of high interest for the future is to investigate the association between analyst accuracy and managerial tools, in order to find out whether the results are still consistent with this study. This is crucial as it would enhance the existing literature with further evidence on whether forecast accuracy and forecasting error are affected by use of managerial tools.

Fourthly, to measure the impact of managerial tools on information asymmetry, the researcher used only the average percentage quoted spread measure. In spite of the popularity of this measure in the existing literature, both Bharath at al. (2009) and Abad et al. (2016) use the index of market microstructure measures, and they suggest that the use of a composite index is more reliable than the individual measures. They argue that the individual measures could provide inconsistent interpretations. Therefore, this area of research may be of high interest for future investigation, that is, to use the index of market microstructure measures and find out whether the results are still consistent with this study.

Finally, to examine the impact of managerial tools on information asymmetry, this research focused on the post-IFRS period; however, it could be interesting if it were carried out using data belonging to the UK GAAP (pre-IFRS) period. It is essential to understand whether there has been any shift in managerial behaviour and what its impact has been on information asymmetry. This is critical for policy makers in the UK to understand how managers manage information asymmetry levels. These areas of research may be of high interest for future studies.

Table 7-9: Summary of the main findings

Research objective	Hypothesis	Accept/ Reject	Main findings	Reflective theory
To examine the tools that managers use to meet or beat analyst expectations post-IFRS in the UK.	*Hypothesis (1): Ceteris paribus, there is a significant negative relationship between meeting or beating analyst forecasts and managing earnings through accrual earnings management.*	***Reject***	There is weak evidence to suggest a negative relationship between accrual earnings management and meeting or beating analyst forecasts. Managers are unlikely to use accrual earning management for two reasons: because it is not common in the UK even pre-IFRS, and to avoid detection by auditors or regulators.	*The results of this study are consistent with the theoretical base of agency theory, where there is a conflict between shareholders and managers. Managers engage in various managerial tools to maintain their own interests rather than their shareholders' interests.*
	Hypothesis (2): Ceteris paribus, there is a significant positive relationship between meeting or beating analyst forecasts and managing earnings through real earnings management.	***Accept***	The results show a positive significant association with selling and general and administrative expenses. The findings of the current study provide strong support for the hypothesis that the adoption of the IFRS in the UK may encourage managers use real earnings management.	
	Hypothesis (3): Ceteris paribus, there is a significant positive relationship between meeting or beating analyst forecasts and managing earnings through the classification shifting tool.	***Reject***	There is weak evidence to suggest a positive relationship between use of the classification shifting tool and the MBE proxy. It seems that managers do not prefer to use this tool to hit analyst forecasts post-IFRS era. This argument is consistent with Athanasakou et al. (2011), who claim that the equity market in the UK does not reward firms that hit analyst targets through classification shifting.	

	Hypothesis (4): Ceteris paribus, there is a significant relationship between meeting or beating analyst forecasts and use of the managerial guidance tool.	***Accept***	The results show a positive and significant association between the meeting and beating analyst forecast proxy and the managerial guidance measure. It is more likely that UK firms will continue guiding analyst expectations to hit their forecasts.	
	Hypothesis (4A): Ceteris paribus, there is a significant association between meeting or beating analyst forecasts and accrual earnings management for loss-making firms.	***Reject***	There is weak evidence to suggest that accrual earnings management can be used to hit analyst expectations even with loss-making firms.	
	Hypothesis (4B): Ceteris paribus, there is a significant association between meeting or beating analyst forecasts and real earnings management for loss-making firms.	***Accept***	The results show a positive and significant association with selling and general and administrative expenses for loss-making firms. Thus, these firms employ the same tools to hit analyst forecasts.	
	Hypothesis (4C): Ceteris paribus, there is a significant association between meeting or beating analyst forecasts and classification shifting for loss-making firms.	***Reject***	There is weak evidence to suggest that classification shifting can be used to hit analyst expectations even with loss-making firms.	

	Hypothesis (4D): Ceteris paribus, there is a significant association between meeting or beating analyst forecasts and managerial guidance for loss-making firms	***Accept***	A positive and strong relationship is documented for loss-making. This suggests that these firms are highly motivated by managerial guidance to reduce the level of bad reactions to their negative earnings.	
To examine how analysts react to managerial tools.	*Hypothesis (1): Ceteris paribus, there is a negative and significant association between analyst reactions and the accrual earnings management tool.*	***Reject***	There is weak evidence to suggest a negative association between accrual earnings management and analyst forecasts proxy. Managers may prefer to use this tool to hit analyst forecasts; however, analysts might not prefer managers to use this tool because it leads to suspicion in regards to their forecasts. This is especially the case if the market is strong and investors have high protection rights like in the UK market.	*The results are consistent with the prospect theory viewpoint that analysts are risk-averse in decision making and make irrational decisions to avoid the negative consequences of their current decisions. In spite of the fact that they are professionals, analysts make regular errors in forecasting earnings, and this is*
	Hypothesis (2): Ceteris paribus, there is a significant association between analyst reactions and the real earnings management tool.	***Reject***	The results show that analysts react positively to overproduction costs of real earnings management. However, this association disappeared when it regressed with only manufacturing firms. Thus, there is weak evidence to support the suggestion that this tool is preferred by analysts.	
	Hypothesis (3): Ceteris paribus, there is a negative association between analyst reactions	***Reject***	There is weak evidence to suggest a negative relationship between use of the classification shifting tool and analyst reactions. It appears that analysts do not prefer that this tool be	

	and use of the classification shifting tool.		used to meet or beat their forecasts. This, perhaps, is consistent with Athanasakou et al. (2011), who claim that the equity market in the UK does not reward firms that hit analyst targets through classification shifting.	*because they face a trade-off between maintaining a good relationship with management and maintaining a good reputation in the market.*
	Hypothesis (4): Ceteris paribus, there is a positive association between analyst reactions and use of the managerial guidance tool.	***Accept***	Analyst react positively to managerial guidance. This may indicate that analysts are more likely to like managers to provide them with more voluntary accounting information in the form of guidance.	
	Hypothesis (4A): Ceteris paribus, if analysts react negatively to use of the accrual earnings management tool, then it is expected that analysts will issue sell stock recommendations to these firms.	***Reject***	There is no evidence to support this hypothesis. This is consistent with the above finding that this tool is not preferred as well.	
	Hypothesis (4B): Ceteris paribus, if analysts react negatively to use of the real earnings management tool, then it is expected that analysts will issue sell stock recommendations to these firms.	***Reject***	There is weak evidence to support this hypothesis. This is consistent with the above finding that this tool is not preferred as well.	

	Hypothesis (4C): Ceteris paribus, if analysts react negatively to use of the classification shifting tool, then it is expected that analysts will issue sell stock recommendations to these firms.	***Reject***	This study found no evidence to suggest that analysts issue favourable stock recommendations when managers employ the classification shifting tool.	
	Hypothesis (4D): Ceteris paribus, if analysts react negatively to use of the managerial guidance tool, then it is expected that analysts will issue sell stock recommendations to these firms.	***Accept***	The managerial guidance tool still shows positive and significant with the analyst reaction proxy. However, the interaction of sell recommendation is negatively correlated with analyst reaction proxy. This might suggest that analysts are less likely to issue sell recommendations for firms which provide them with more guidance. In other words, analysts probably issue more buy recommendations to maintain their relationship with managers.	
To examine the impact of managerial tools on information asymmetry	*Hypothesis (1): Ceteris paribus, there is a significant association between accrual earnings management and information asymmetry.*	***Reject***	There is weak evidence to suggest a positive relationship between accrual earnings management and information asymmetry. This implies that managers avoid using this tool as it is easy for this to be detected by investors (Cormier et al., 2013).	*The results are also consistent with agency theory, which predicts that managers employ these managerial tools to mislead users. This managerial practice is used to avoid disclosing essential information*

	Hypothesis (2): Ceteris paribus, there is a positive association between real earnings management and information asymmetry.	***Accept***	The evidence shows that both operating cash flow and selling, general and administrative expenses are positive and statistically significant with the bid-ask spread. This indicates that real earnings management is used to mislead users and avoid disclosing private information to these users, which leads to an increase in information asymmetry.	*to market users. This practice, according to this theory, leads to an increase in information asymmetry levels.*
	Hypothesis (3): Ceteris paribus, there is a significant association between classification shifting and information asymmetry.	***Reject***	There is weak evidence to suggest a significant relationship between this tool and information asymmetry. This is because classification shifting affects the credibility of financial reporting as investors are misled, and this behaviour can be discovered over the following year, and firms generate negative future abnormal returns (Haw et al., 2011).	
	Hypothesis (4): Ceteris paribus, there is a significant association between managerial guidance and information asymmetry.	***Reject***	There is weak evidence to support the association between managerial guidance and information asymmetry.	

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APPENDICES

Appendix A: Summary of definition of variables that are used in this thesis

Variable	Definition
WCA_{it}	Working capital accruals are calculated as change in current assets minus change in current liabilities minus change in cash and cash equivalent plus change in short term debt.
$AWCA_{i,t}$	Equal to 1 if the result of abnormal working capital accrual earnings is positive and 0 otherwise. Abnormal working capital accrual is calculated as the difference between the actual working capital accrual and expected (normal) working capital accrual.
$\Delta REC_{i,t}$	Change in accounts receivable.
$\Delta REV_{i,t}$	Change in accounts revenue.
$PPE_{i,t}$	Gross property, plant and equipment.
$ROA_{i,t-1}$	Return on assets, calculated as earnings before interest, tax, depreciation & amortisation divided by total assets.
$ACFO_{i,t}$	Abnormal levels of cash flow from operations.
$S_{i,t}$, $\Delta S_{i,t}$	Net sales and change in net sales.
$PROD_{i,t}$	Production costs: the sum of cost of goods sold and the change in inventory.
$DISEXP_{i,t}$	Discretionary expenses are the sum of R&D expenses and advertising, selling and administration expenses (SG&A). As long as SG&A expenses are available, R&D costs are set to 0 if they are missing.
$MV_{i,t}$	Marker value is calculated as log of market value of equity.
Tobin's Q	Total assets minus book value of equity plus total market value of equity divided by total assets.
$INT_{i,t}$	Internal funds available for investment, calculated as income before exceptional items, R&D and deprecation.

$UCE_{i,t}$	Unexpected core earnings (UCE) is calculated as the difference between core earnings (CE) and expected core earnings (ECE).
$CE_{i,t}$	Core earnings are calculated as I/B/E/S actual earnings per share multiplied by the weighted average number of shares (scaled by total sales).
$ATO_{i,t}$	The assets-turnover ratio: total sales divided by average net operating assets (NOA), where NOA is operating assets minus operating liabilities. Operating assets is total assets minus cash and cash equivalent. Operating liabilities is total assets minus total debt, total equity and minority interest.
$NEG\_\Delta SALES_{i,t}$	Negative change in sales, equal to 1 if ΔSales is negative, 0 otherwise.
$UEF_{i,t}$	Unexpected managerial guidance: the difference between the last earnings forecast before the release of the earnings announcement (AF0) and the expected latest earnings forecast (EF). Equal to 1 if the result of UEF is negative and 0 otherwise.
$AF0_{i,t}$	Latest forecast for the year made prior to the earnings announcement date.
$EF_{i,t}$	The expected latest earnings forecast is calculated as lagged I/B/E/S actual EPS plus the expected change in earnings E (ΔEPS).
$EPS_{i,t}$	I/B/E/S reported actual earnings per share.
$CERET_{i,t}$	Return Index for stock price over 12 months, extracted from the DataStream Database.
$MBE_{i,t}$	Equal to 1 if earnings surprise is expected to be 0 or positive value and otherwise 0. Earnings surprise is calculated as the difference between actual reported EPS and the final analyst forecast made before the announcement date (from I/B/E/S).
$ACFO_{i,t}$	Abnormal cash flow from operating: the difference between the actual level of cash flow from operating

	and the normal level of cash flow from operating. Equal to 1 if the result of abnormal CFO of real earnings management is positive and 0 otherwise.
$APROD_{i,t}$	Abnormal production costs: the difference between the actual level of production costs and the normal level of production costs. Equal to 1 if the result of abnormal PROD real earnings management is positive and 0 otherwise.
$ASGA_{i,t}$	Abnormal selling and general and administration expenses: the difference between the actual level of selling and general and administration expenses and the normal level of selling and general and administration expenses. Equal to 1 if the result of abnormal SGA real earnings management is positive and 0 otherwise.
$ACS_{i,t}$	Abnormal classification shifting is calculated as the difference between the actual core earnings and expected core earnings. Equal to 1 if the result of abnormal core earnings is positive and 0 otherwise.
$PROF_{i,t}$	Equal to 1 if I/B/E/S is positive in the current accounting period and otherwise 0.
$P\Delta EARN_{i,t}$	Equal to 1 if annual change in I/B/E/S is positive and otherwise 0.
$GROWTH_{i,t}$	Calculated as the market value of outstanding shares at the end of the year divided by the book value of common equity at the end of the year.
$LID_{i,t}$	Equal to 1 if the firm belongs to a high-risk industry (e.g. biotechnology, computers, electronics and retail) and otherwise 0.
$INDPROD_{i,t}$	Average annual growth in industrial production is calculated using the UK industrial production index and is adjusted for inflation.
$INDD_{i,t}$	Industry dummies (INDD) are used to control for industry differences which cannot be explained by the control variables.

$SIZE_{i,t}$	The logarithm of total assets.
$KDG_{i,t}$	Determined as the difference between I/B/E/S consensus forecast EPS in the fourth quarter and I/B/E/S consensus forecast EPS in the third quarter. Equal to 1 if the difference between EPS in 3rd quarter and 4th quarter is negative or 0, and otherwise 0. All data extracted from the I/B/E/S database.
$FOLLW_{i,t}$	Calculated as the number of analysts covering a particular firm in that year. Data extracted from the I/B/E/S database.
$FERROR_{i,t}$	Calculated as the difference between the mean of consensus analyst EPS forecasts and mean of the actual reported EPS; all are available in I/B/E/S from the Thomson Reuters Database.
$SPREAD_{i,t_{i,t}}$	The average percentage quoted spread, calculated on an annual basis as (ask price − bid price)/ [(ask price + bid price)/2].
$FLEV_{i,t}$	Represents financial leverage and is calculated as total debt divided by total equity.
$TURNOVER_{i,t}$	Turnover ratio, measured as the annual total number of shares traded in a year divided by the average total number of shares outstanding for each firm.
$DISP_{i,t}$	Calculated as the standard deviation of the latest I/B/E/S consensus earnings per share prior to earnings announcement

Appendix B: Industry Classification Benchmark (ICB) (according to FTSE Russell 2016)

Industry	Sub-sector	Sector	Total
2000 Industrials	2700 Industrial Goods & Service	2710 Aerospace & Defence	9
		2720 General Industries	7
		2730 Electronics & Electrical Equipment	11
		2750 Industrial Engineering	12
		2770 Industrial Transportation	7
		2790 Support Services	50
	2300 Construction & Materials	2350 Construction & Materials	11
Total			107
3000 Consumer Goods	3500 Food & Beverage	3530 Beverage	4
		3570 Food Producers	8
	3300 Automobiles & Parts	3353 Automobiles	1
	3700 Personal & Household Goods	3720 Household Goods & Home Construction	11
		3740 Leisure Goods	2
		3760 Personal Goods	5
		3780 Tobacco	2
Total			33
1000 Basic Materials	1300 Chemicals	1350 Chemicals	7
	1700 Basic Resources	1730 Forestry & Paper	1

		1750 Industrial Metals & Mining	2
		1770 Mining	17
Total			27
0001 Oil & Gas	0500 Oil & Gas	0530 Oil & Gas Producers	9
		0570 Oil Equipment & Service & Distribution	6
Total			15
4000 Health Care	4500 Health Care	4530 Health Care Equipment & Service	3
		4570 Pharmaceuticals & Biotechnology	10
Total			13
5000 Consumer Services	5300 Retail	5330 Food & DKDG Retailers	6
		5370 General Retailers	23
	5500 Media	5550 Media	17
	5700 Travel & Leisure	5750 Travel & Leisure	26
Total			72
900 Technology	9500 Technology	9530 Software & Computer Services	7
		9570 Technology Hardware & Equipment	6
Total			13
Overall sample size			280

Appendix C: Summarises the main differences between IFRS and the UK GAAP

Accounting Theme	IFRS	UK GAAP
Presentation of financial Statements Accounting	IAS 1 appears to be less prescriptive than the UK Companies Act. Any capital transactions with owners may be shown in the statement of total recognised gains and losses.	Under FRS 3, any capital transactions with owners are presented in the reconciliation of movements in shareholders' funds.
Accounting policies, changes in accounting estimates and errors	Under IAS 8, there is no distinction between fundamental errors and other material errors. IAS	Under FRS 3, the restatement of financial statements is required only for fundamental errors.
Events after the balance sheet date	IAS 10 appears to place greater emphasis on the distinction making reference to specific items, such as dividends to holders of equity instruments.	Both IAS 10 and SSAP 17 distinguish between adjusting events and non-adjusting events.
Income taxes dividends	IAS 12 requires the use of deferred tax on revaluations of fixed assets.	Under FRS 19, deferred tax is not required, while a rollover relief may in certain cases apply.
Gains and losses on disposal of fixed assets	IAS 16 requires the cost of the asset given up to be measured at fair value, unless the transaction lacks commercial substance or cannot be reliably measured.	Under FRS 15, there is no equivalent requirement.
Review of residual values	IAS 16 requires increases in an asset's residual value to be carried out using current prices.	FRS 15 generally uses prices at the date of acquisition or latest valuation.
Leasing land and buildings Effects	In contrast to SSAP 21, IAS 17 requires separate treatment of land and buildings. Under IAS 17, the recognition of income from finance leases is	SSAP 21 requires the net cash investment method. SSAP 21 requires only the disclosure of information regarding the payments that

	based on the net investment method. IAS 17 requires disclosure of the total of future minimum lease payments.	are due in the next accounting period. SSAP
Effects of changes in foreign exchange rates	Under IAS 21, the foreign currency translation of the profit and loss statement should be performed using the average rate of exchange for the period. IAS 21 states that goodwill should be treated as an asset and translated at the closing rate.	SSAP 20 requires the use of the closing rate. SSAP 20 does not make a reference to the accounting treatment of goodwill.
Disposal of foreign subsidiaries	Under IAS 21, the associated exchange differences should be recorded in the profit and loss statement.	Under FRS 3 this treatment is not allowed.
Related party disclosures	IAS 24 requires only the disclosure of information about transactions between related parties by type of related party. Consolidated	FRS 8 requires the disclosure of the names of transacting related parties. In contrast to IAS 24, FRS 8 allows the transactions of subsidiaries that are 90% or more owned with other group members not to be disclosed.
Consolidated and separate financial statements	Under IAS 27, an intermediate parent company may not prepare consolidated financial statements if the parent company publishes consolidated financial statements that are in line with IFRSs.	FRS 2 does not allow this exemption if the parent company is established outside the EU.
Accounting for investments in associates	Under IAS 28, where an associate makes losses, the investing firm shall recognise a liability if payments or obligations	Under FRS 9, a liability should be recognised, unless the investing firm is going to terminate the business relationship with the investee as its associate.

	have been recorded on behalf of the associate.	
Financial instruments	IAS 39 requires convertible loan stock to be separated between equity conversion rights and debt. Investment	FRS 4 considers convertible loan stock as a liability, unless the equity and debt components are distinguishable and separable.
Investment property	Under IAS 40, investment property may be measured using fair values or depreciated cost. If fair value is used, any gains and losses that may arise should be recognised in the income statement.	Under SSAP 19, investment property should be measured using open market values and any arising gains and losses should be recognised in the statement of total recognised gains and losses. Source:

Source: IASB (2003), Ormrod & Taylor (2004), (Iatridis, 2010)

Appendix D: Diagnostic tests for empirical chapters 4, 5 and 6

Chapter 4: Diagnostic tests for MBE model

A researcher uses several basic tests to assess the validity of the logistic model and to ensure that the specific statistical assumptions for the logistic model have been met before relying on the regression outputs. These assumptions are required to hold in order to allow the researcher to get the efficient estimator from the regression models (Studenmund, 2006). In general, the researcher checks whether the data collected have met the main assumptions of the logistic regression. These assumptions include: i) linearity, ii) normality of the residual, iii) multicollinearity, iv) heteroscedasticity, v) Hosmer-Lemeshow test and vi) classification test. These are discussed in detail in the following sections.

Linearity assumption

The dependent variable is assumed to be the linear function of the estimated parameters, but not necessarily the explanatory variables (Chatterjee and Hadi, 2006). In spite of transforming non-linear models into linear model forms, it is important to mention that the incorrectly specified form of a model may lead to calculating coefficients incorrectly. The conclusion that is drawn by a researcher influences the nature and strength of the relationship between variables that a researcher is interested in (Williams et al., 2013). The assumption of linearity applies to OLS regression, which needs to be tested with scatterplots of the dependent variables. This is vital because failing to satisfy this assumption may lead to drawing the wrong conclusion on the nature and strength of the relationship between the variables that a researcher is interested in (Williams et al., 2013).

In contrast, logistic regression is commonly used when the distribution between the dependent variables (DVs) and the independent variables (IVs) is expected to be nonlinear (Tabachnick and Fidell, 2007). This nonlinearity in the coefficients of the logit model is estimated using the maximum likelihood technique (Studenmund, 2011). Thus, it does not require the explained variable and explanatory variables to be linear. It assumes that linearity holds only between explanatory variables and log odds, and applies to non-linear log transformation to predict odd ratios (Tabachnick and Fidell, 2007). Therefore,

the researcher checks the assumption of a linear relationship between continuous IVs individually and the log transform of the DVs. The Box-Tidwell test is used to test the linearity assumption in this study. This test is performed through creating an interaction variable for each continuous IV with its log transform. Then, the logistic regression runs every time between DVs and the continuous predictor with its log. If an interaction term appears to be significant ($p < 0.005$), then the assumption has been violated with respect to linearity. The results of this test are summarized in Table 1D below.

Table 1D: Result of linearity test for MBE logistic model

Linearity Test	Interaction IV	LR $\chi 2$	p-value
Panel A: Box–Tidwell Test	Growth	2.92	0.29
	INPROD	3.83	0.417

Normality of residual assumption

Normality is related to error term, which it is assumed will be normally distributed. It is identified through the residual that is estimated via a regression model (Weisberg, 2005). However, the residual is normally the difference between the observed value and the estimated value in a model. This condition is vital to make an inference about the sample size that represents the population. However, this does not mean that the estimates are not BLUE.[26] In contrast, in logistic regression, the outcome of each case is independent of each case. In other words, each case is unrelated to any of the other cases (Tabachnick and Fidell, 2007). In addition to that, the dependent variable in logistic regression may not be directly observed compared to the dependent variable in OLS. Thus, the test of independence may not be applicable for the MBE logistic model.

[26] It stands for the Best Linear Unbiased Estimator. It occurs when the coefficient of (OLS) estimator has an error of zero and a constant variance. It is called the "Best" because it has the lowest variance of the estimate.

Multicollinearity assumption

The concept of collinearity is a term used in econometrics to describe a linear correlation between two independent variables. However, multicollinearity is used if more than two independent variables are involved. If two independent variables are highly related, then it is difficult to capture the real effects and to discover whether the effect is related to the first variable or the second. In this case, there is a problem in estimating the accuracy of the coefficients of the model, especially if variables move identically in the same direction. Thus, this is a case of imperfect multicollinearity. Although the estimates are considered unbiased multicollinearity circumstances, it leads to increasing the variance and standard errors of the estimates. Furthermore, multicollinearity reduces the t-score value because of large standard errors in the estimated coefficients. Another consequence of significant multicollinearity is that, if one explanatory variable is dropped from the regression, even if it is not statistically significant, it changes the coefficient of the other variables significantly (Studenmund, 2011).

The most popular method used by researchers to detect severe multicollinearity is the use of variance inflation factors (VIFs). This is a reciprocal of tolerance 1- (1 - R^2). The consequences can be minimised by dropping a redundant explanatory variable that is statistically insignificant, because adding variables that measure something may cause a multicollinearity problem if they are highly correlated with other variables in the model. Another way to deal with this problem is to increase the sample size to obtain more accurate estimates, which then leads to a reduction in the variance estimated coefficients, and this has a direct impact on reducing the multicollinearity problem (Studenmund, 2011).

Similarly, logistic regression is also affected by high correlation among independent variables, which may require deleting one or more of the correlated variables (Tabachnick and Fidell, 2007). The most popular method used by many researchers to detect severe multicollinearity is the use of a correlation matrix of coefficients and VIFs. The current study uses both tests for the MBE logistic model.

Table 2D shows an additional test for multicollinearity, and the results of the VIFs for all independent variables do not exceed 1.94, which is below the cut-off of 10 that is proposed by Gujarati (2004) for the multiple regression. A correlation matrix is presented in Table 3D. Thus, both tests indicate that multicollinearity is not a problem in the regression models used in this study.

Table 2D: Variance inflation factors (VIF) for multicollinearity tests for MBE logistic model

Variable	VIF	1/VIF
PCHEARN	1.94	0.515
UEF	1.92	0.522
PROF	1.77	0.565
ACS	1.7	0.588
ACFO	1.17	0.854
SIZE	1.09	0.921
INDPROD	1.07	0.934
ASGA	1.04	0.961
GROWTH	1.03	0.968
AWCA	1.02	0.982
APROD	1.01	0.987
Mean VIF	1.34	

Table 3D: Correlation matrix of coefficients for multicollinearity tests for regression model

Variable	MBE	AWCA	ACFO	APROD	ASGA	ACS	UEF	PROF	PCHEARN	GROWTH	SIZE	LID
AWCA	0.02											
ACFO	-0.004	0.008										
APROD	-0.012	-0.024	0.055									
ASGA	0.036	0.004	0.176	0.017								
ACS	0.05	0.077	0.295	0.092	0.071							
UEF	0.023	-0.068	-0.019	-0.015	-0.052	0.001						
PROF	0.092	0.048	0.309	0.082	0.075	0.627	-0.048					
PCHEARN	0.254	0.093	0.051	0.041	0.028	0.06	-0.681	0.16				
GROWTH	0.001	0.026	0.078	-0.002	0.021	0.078	-0.048	0.081	0.067			
SIZE	-0.05	0.047	0.127	-0.015	-0.021	0.131	-0.095	0.186	0.069	0.126		
LID	0.002	-0.14	-0.016	-0.031	0.028	-0.047	-0.066	-0.019	0.019	0.046	0.062	
INDPROD	0.042	0.052	-0.01	-0.002	0.039	0.056	-0.183	0.07	0.156	0.109	0.153	-0.004

Heteroscedasticity assumption

In addition to the above assumptions, the error terms are assumed to have a constant variance across all levels of explanatory variables. However, if the variance of errors is not constant, then this creates a heteroscedasticity problem. Heteroscedasticity is most likely to occur if there is a huge discrepancy between the largest and the smallest value of the explained variable. This is most common when using cross-sectional data because the sample size selected normally includes values with different sizes. This problem can also occur because of an error in the specification resulting from omitting a variable in the model. This error is observed partly in the error term because of this omission (Studenmund, 2011). Heteroscedasticity still causes the OLS to produce consistent and unbiased estimators if, and only if, the errors are independent (Weisberg, 2005). However, the heteroscedasticity increases the variance of the estimates, and this leads to inflation of the response variable, which is then reflected in the predictor variables. This ultimately causes the estimator to be inefficient, and the standard errors of the coefficients will be biased and lead to unreliable hypothesis testing (Studenmund, 2011).

Serial correlation can be caused by a specification error due to an omission of an important variable from the regression model, or it may be because of incorrect functional form, and it is more obvious in time-series data. Like heteroscedasticity, error terms include part of the omitted variable effect. In fact, the OLS estimators in serial-correlation conditions are still unbiased and consistent, but this problem causes the coefficient of standard errors to increase, and this is most likely to make the estimated coefficients different from the true value. Again, any conclusion arrived at by research from hypothesis tests cannot be reliable because there is a greater chance that the researcher may intend to reject the null hypothesis even when it is true, which causes a Type I error (Studenmund, 2011).

In the case of binary regression and specifically for logit models, the dependent variable is binary. The residuals are distributed between two key points when plotted against the fitted values of the model. Thus, it is possible for the variance of zero residuals and the variance of the value one residual to be the same for a binary variable. However, to ensure that heteroscedasticity

does not affect the result for the model, 'robust' command is used to control for heteroscedasticity in the MBE random effect logistic model.

Hosmer–Lemeshow test

The Hosmer-Lemeshow test is a popular test, commonly used for the goodness of fit in logistic models. Hosmer and Lemeshow (1982) proposed that in a large sample, the dataset can be divided into ten groups to test the significance of goodness of fit. The Hosmer-Lemeshow statistic result of a p-value greater than 0.05 is a good fit for the model. The test is performed by Stata software through running the logit model with all proposed variables including control variables. The result for the Hosmer-Lemeshow test is shown in Table 4D.

Table 4D: Result of Hosmer–Lemeshow test for MBE logistic model

Model	N	Groups	$\chi 2$	p-value
MBE	2,397	10	5.77	0.673

Classification table

This is one method that is used to evaluate the predictive accuracy of the logistic regression model. The classification table helps the researcher to identify how well the model is predicting actual outcomes. The output of this test is shown in Table 5D.

Table 5D: Result of classification table of the logit model for MBE

-------- True --------			
Classified	D	~D	Total
+	1313	721	2034
-	102	261	363
Total	1415	982	2397
Classified + if predicted Pr(D) >= .5 True D defined as MBE1 != 0			
Sensitivity	Pr(+ D)	92.79%	
Specificity	Pr(-~D)	26.58%	
Positive predictive value	Pr(D +)	64.55%	
Negative predictive value	Pr(~D -)	71.90%	
False + rate for true ~D	Pr(+~D)	73.42%	
False - rate for true D	Pr(- D)	7.21%	
False + rate for classified +	Pr(~D +)	35.45%	
False - rate for classified -	Pr(D -)	28.10%	
Correctly classified			65.67%

Overall, the Box-Tidwell test is used to test linearity assumptions in logistic regression. The interaction terms of continuous variables obtained by this test appear to be insignificant ($p > 0.05$; two-tailed). Thus, the results passed this test. The multicollinearity assumption is assessed in two ways: the first method is through a variance inflation factor (VIF), which shows that all variables have a value of less than 2. The second test is through a correlation matrix. Both results indicate that no potential collinearity problem can be identified.

To check the model's performance regarding the goodness of fit, the Hosmer-Lemeshow test was conducted for the logistic regression model. Based on this test, the p-value shows insignificant results ($p > 0.05$; $\chi 2 = 5.77$), indicating a good fit of the model. Classification tables were also used to evaluate the predictive accuracy of the logistic regression model. The classification table helps the researcher to identify how effective the model is in predicting the actual outcomes. The model can predict approximately 65.67%, which indicates a reasonable prediction.

Chapter 5: Diagnostic tests for KDG model

A researcher uses several basic tests to assess the validity of the logistic model and to ensure that the specific statistical assumptions have been met before the researcher relies on the regression outputs. These assumptions include: i) linearity, ii) normality of residual, iii) multicollinearity and iv) heteroscedasticity. There are discussed in detail in the following sections.

Linearity assumption

The logistic regression runs every time between DVs and continuous predictor with its log. If an interaction term appears to be significant ($p < 0.005$), then the assumption has been violated with respect to linearity. The result of this test is summarised in Table 6D below.

Table 6D: Result of linearity tests for KDG logistic model

Linearity Test	Interaction IV	LR $\chi 2$	p-value
Box–Tidwell Test	Growth	FOLLW	2.71
	INPROD	FERROR	3.21
		INPROD	4.54

Normality of residual assumption

In the logistic regression, the outcome of each case is independent of each case. In other words, each case is unrelated to any of other cases (Tabachnick & Fidell, 2007). In addition, the dependent variable in logistic regression may not be directly observed compared to the dependent variable in OLS. Thus, the test of independence may not be applicable for the KDG logistic Model.

Multicollinearity assumption

The most popular method used by many researchers to detect severe multicollinearity is to use a correlation matrix of coefficients and variance inflation factors (VIFs). Therefore, the researcher used both tests for the MBE Logistic Model. Table 7D shows an additional test for multicollinearity and the results of the VIFs for all independent variables do not exceed 2.27, which is below the cut-off of 10 that is proposed by Gujarati (2004) for multiple

regression. In addition, the correlation matrix in Table 8D indicates that there is no potential collinearity problem between the variables under the logistic model that can be identified. Thus, both tests indicate that multicollinearity is not a problem in the regression models used in this study.

Table 7D: Variance inflation factors (VIFs) for multicollinearity tests for KDG logistic model

Variable	VIF	1/VIF
SIZE	2.27	0.44078
FOLLW	2.21	45.19%
ACS	1.14	0.87406
ACFO	1.14	0.87749
FERROR	1.06	0.94417
ASGA	1.05	0.95231
UEF	1.05	0.953
INDPROD	1.05	0.95663
APROD	1.02	0.98237
AWCA	1.01	0.98531
Mean VIF	1.30	

Table 8D: Correlation matrix of coefficients for multicollinearity tests for regression model

Variable	KDG	AWCA	ACFO	APROD	ASGA	ACS	UEF	SIZE	FOLLW	FERROR
AWCA	-0.011									
ACFO	-0.0243	0.0083								
APROD	0.0404	-0.0236	0.0546							
ASGA	-0.0153	0.0039	0.1757	0.017						
ACS	0.0353	0.0766	0.2953	0.0923	0.0707					
UEF	0.1088	-0.0677	-0.0188	-0.0149	-0.0517	0.0007				
SIZE	0.041	-0.0141	0.1041	0.0356	-0.0701	0.095	0.019			
FOLLW	0.0109	-0.022	0.087	-0.0269	-0.0557	0.1007	-0.0167	0.735		
FERROR	-0.0236	-0.0137	0.0392	0.0112	-0.0455	0.1352	0.0577	-0.1327	-0.0458	
INDPROD	0.0613	0.0524	-0.0101	-0.0018	0.0389	0.056	-0.1828	0.0305	0.0249	0.0346

Heteroscedasticity assumption

In the case of binary regression and specifically for logit models, the dependent variable is binary. The residuals are distributed between two key points when plotted against the fitted values of the model. Thus, it is possible for the variance of zero residuals and the variance of value one residuals to be the same for a binary variable. However, to ensure that heteroscedasticity might affect the result for the model, the "robust" command is used to control for heteroscedasticity for the KDG Logistic Model.

Hosmer–Lemeshow test

The Hosmer-Lemeshow test is a popular test, which is commonly used for goodness of fit in logistic models. Hosmer and Lemeshow (1982) proposed that in a large sample, the dataset can be divided into ten groups to test the significance of goodness of fit. A Hosmer-Lemeshow statistical result of a p-value of greater that 0.05 is a good fit for the model. The output is shown in Table 9D.

Table 9D: Result of Hosmer–Lemeshow test for KGD logistic model

Model	N	Groups	$\chi 2$	p-value
KDG	2,397	10	13.66	0.091

Classification table

Classification tables are one method that is used to evaluate the predictive accuracy of the logistic regression model. The classification table helps the researcher to identify how well the model is predicting actual outcomes. The output is shown in Table 10D.

Table 10D: Result of classification table of the logit model for KDG

	-------- True --------		
Classified	D	~D	Total
+	890	676	1566
-	390	441	831
Total	1280	1117	2397
Classified + if predicted Pr(D) >= .5			
True D defined as LOWERHIGHER != 0			
Sensitivity	Pr(+ D)	69.53%	
Specificity	Pr(-~D)	39.48%	
Positive predictive value	Pr(D +)	56.83%	
Negative predictive value	Pr(~D -)	53.07%	
False + rate for true ~D	Pr(+~D)	60.52%	
False - rate for true D	Pr(- D)	30.47%	
False + rate for classified +	Pr(~D +)	43.17%	
False - rate for classified -	Pr(D -)	46.93%	
Correctly classified			55.53%

To sum up, to meet the linearity assumption, the Box-Tidwell Test shows that the interaction terms of continuous variables are insignificant ($p > 0.05$; two-tailed). Thus, there is no issue of linearity of logistic regression. For multicollinearity, the researcher used both the variance inflation factors (VIFs) test and the correlation matrix test. The first test reports that all variables have a value of less than three, while the correlation matrix indicates that there is no potential collinearity problem between the variables under the logistic model that can be identified. However, as the model is a binary regression, there is a high possibility for the variance of zero residuals and the variance of value one residual, to be the same for a binary variable. To ensure that the heteroscedasticity problem is controlled in this study, robust standard errors were used in the model.

Two additional tests were conducted by the researcher to check the overall performance of the model. One of them is the goodness of fit using the Hosmer-Lemeshow test, which indicates that the p-value is not significant ($p > 0.05$; $\chi 2 = 13.66$). Therefore, the model initially has a good fit. To help the researcher to identify how effective the model is in predicting actual outcomes,

a classification table was also applied. The model can predict approximately 55.53%. Thus, it appears that the model can correctly predict the actual outcome of the model.

Chapter 6: Diagnostic tests for SPREAD model

A researcher uses several basic tests to assess the validity of a model and to ensure that the specific statistical assumptions have been met before the researcher relies on the regression outputs. There are some basic assumptions that must be held for Ordinary Leased Square (OLS) before relying on the regression output.[27] Additionally, there are three main properties for the estimator to represent the true population, which are unbiased, consistent and efficient estimators. The unbiased estimator means that it is expected that a researcher will obtain a mean value that is close to the true parameter in the population. The second property is that a parameter estimator must be consistent to reflect the true value as the sample size increases. On the other hand, the efficient estimator is expected to be the most accurate in representing the true value (i.e. it has a smaller value of variance) (Williams et al., 2013). In general, the researcher needs to check whether the data collected have met the main assumptions of OLS. These assumptions include: i) linearity, ii) normality of residual, iii) multicollinearity and iv) heteroscedasticity. These are discussed in detail in the following sections.

Linearity assumption

The linearity assumption suggests that the relationship between the dependant variable and independent variables will be linear. If a researcher ignores this assumption, it could lead to drawing a wrong conclusion on the nature and strength of the relationship between variables that a researcher is interested in (Williams et al., 2013). However, it could be tested with scatterplots of the dependent and independent variables. Therefore, the researcher in this study performed the scatterplot between the SPREAD variable against each of the independent variables in the regression model. The results do not show that there is a linearity problem in this study.

[27] The Best Linear Unbiased Estimate (BLUE) aspect of the estimated coefficients is still maintained as long as the other assumptions hold (Dougherty, 2011).

Normality of residual assumption

The normality assumption is related to the error term and is expected to be normally distributed. It is estimated by the residual in a regression model (Weisberg, 2005). This assumption is important to make an inference to conclude that the sample size represents the population. In this study, the researcher examined the assumption of normality through generating the residuals (rstu) of the regression model. Then, the Kdensity command was applied using Stata, which compares a Kernal density with the normal condition in a graphical form. This is shown in Figure 1D, which may indicate that a normality assumption does not hold. However, as the sample size is large, with observations of 2,397, the model is still valid (Gujarati, 2004) and can be used to test the relationship between managerial tools and information asymmetry.

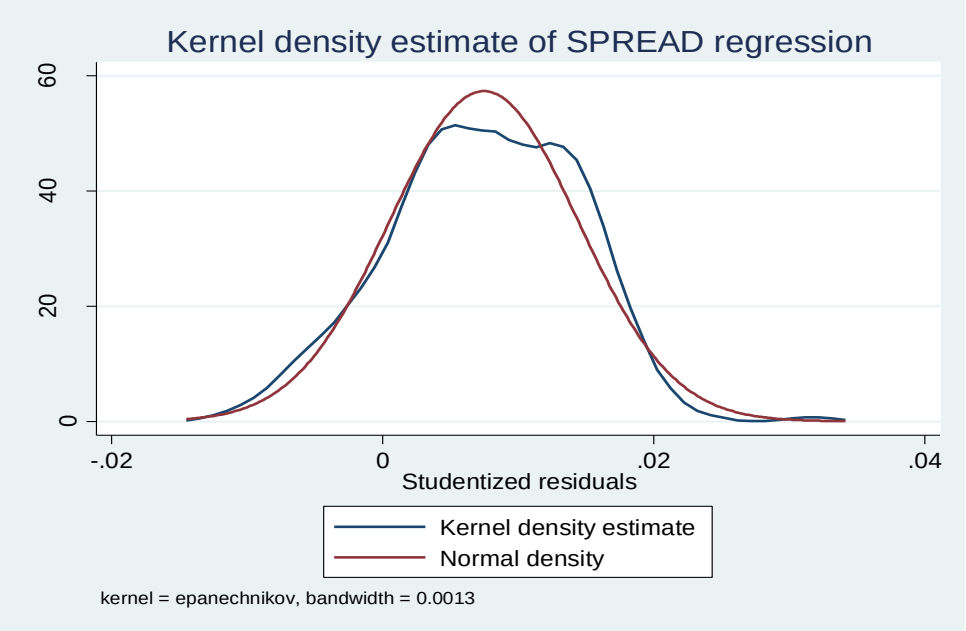

Figure 1D: Kernel density plot for SPREAD regression model

Multicollinearity assumption

If two independent variables are highly related, then it is difficult to capture the real effects and to discover whether the effect is related to the first variable or the second. In this case, there is a problem in estimating the accuracy of the coefficients of the model, especially if variables move in the same direction identically. The multicollinearity problem leads to an increase in the variance and standard errors of the estimates (Studenmund, 2011).

The most popular method used by researchers to detect severe multicollinearity is the use of a correlation matrix of coefficients and variance inflation factors (VIFs). Therefore, the researcher used both tests in the SPREAD panel model. Table 11D shows VIFs for all independent variables do not exceed 3.12, which is below the cut-off of 10 proposed by Gujarati (2004) for multiple regression. Table 6-3 shows the results of the correlation matrix between variables (chapter 6). Thus, both tests indicate that multicollinearity is not a problem in the regression model used in this study.

Table 11D: Variance inflation factors (VIFs) for multicollinearity tests for SPREAD model

Variable	VIF	1/VIF
SIZE	3.12	0.320009
ACFO	2.91	0.343333
ASGA	2.22	0.449739
ACE	1.45	0.691399
APROD	1.3	0.771139
FLEV	1.16	0.863019
GROWTH	1.14	0.878151
TURNOVER	1.12	0.891506
UEF	1.11	0.902806
INDPROD	1.08	0.928918
Mean VIF	1.76	

Heteroscedasticity assumption

The residuals are distributed between two key points when plotted against the fitted values of the model. The results of both the Breusch-Pagan test and the White test are presented in Table 12D, which shows that the null hypothesis is rejected if the variance of the residual is homogeneous. Therefore, the regression model suffers from a heteroscedasticity problem, and to solve this issue the researcher used the robust command to deal with heteroscedasticity and serial correlation. However, to ensure that heteroscedasticity would affect the result for the model, 'robust' clustered by the firm-level command is used to control for heteroscedasticity for the SPREAD fixed effect model.

Table 12D: Heteroscedasticity tests for SPREAD regression model

	The Breusch-Pagan Test		The Whit Test	
Regression	$\chi 2$	p-value	$\chi 2$	p-value
SPREAD	696.61	0.000	276.87	0.000

Overall, the linearly assumption does not indicate that it is a problem in this study. The researcher examined the assumption of normality and the result indicates that the normality assumption does not hold. However, as the sample size is large, with 2,397 observations, the model could still be valid (Gujarati, 2004) and can be used to test the relationship between managerial measures and the information asymmetry proxy. For the multicollinearity test, VIFs and the correlation matrix both indicated that no potential collinearity problem could be identified. For instance, the results of the VIFs for all independent variables do not exceed 3.12, which is below the cut-off of 10 proposed by Gujarati (2004) for multiple regression models. A correlation matrix was also applied, and the results do not indicate any problem in multicollinearity. Therefore, a multicollinearity analysis suggests that no potential collinearity problem can be identified. To account for heteroscedasticity and serial correlation, a robust standard error clustered by firm level is included in the regression model.

Appendix E: Discretionary expenses earnings management measure

To measure discretionary expenses, the normal level of discretionary expenses was estimated based on Roychowdhury (2006), and expressed as a linear function of lagged sales.

$$\mathrm{DISEXP}_{i,t}/\mathrm{A}_{i,t-1} = \alpha_0 + \beta_1 \left[1/\mathrm{A}_{i,t-1}\right] + \beta_2 \left[\mathrm{S}_{i,t-1}/\mathrm{A}_{i,t-1}\right] + \beta_3 \mathrm{ROA}_{i,t-1} + \varepsilon_{i,t} \qquad (1)$$

Discretionary expenses ($\mathrm{DISEXP}_{i,t}$) are the sum of research and development costs (R&D) and advertising, selling and administration expenses (SG&A) in year t for industry i. As long as SG&A expenses are available, R&D costs are set to zero if they are missing. ($\mathrm{S}_{i,t-1}$) is the net sales for the previous period for firm i. Since these types of expenses do not generate firm revenue directly, firms may cut part of these expenses to increase current earnings.

Similarly, the abnormal level of discretionary expenses is calculated for all firms as the actual discretionary expenses minus the normal level of discretionary expenses estimated using the above equation, and this is shown as follows:

$$\mathrm{ADISEXP}_{it} = \frac{\mathrm{DISEXP}_{i,t}}{\mathrm{A}_{i,t-1}} - \mathrm{NDISEXP}_{it} \qquad (2)$$

The abnormal level of discretionary expenditure is similarly measured through the estimated residual, but it is multiplied by (-1). The higher residual values indicate that there is a high chance of cutting discretionary expenses and in this case, firms may be involved in real earnings management by reporting higher earnings.