The Impact of Board Characteristics on Earnings Management: UK Evidence

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Abstract

This thesis uses mainly the agency theory to investigate the impact of board characteristics on its effectiveness in performing the monitoring function. It consists of three empirical studies. The first study explores the impact of board characteristics; particularly independence, CEO duality, activity and size; on earnings management for a sample of *FTSE 350* UK listed companies. The sample for the first study comprises 168 non-financial listed firms during the period 2010-2014. Findings show that hiring independent directors on the board mitigates earnings management, both AEM and REM. Increasing the size of the board mitigates one technique of earnings management, *REM*, but its effectiveness in mitigating *REM* rests on several factors. Moreover, *CEO* duality is negatively associated with *REM*. Finally, no significant association is found between earnings management and other board characteristics.

The second study investigates the diversity of the board of directors, specifically professional background and social diversity, and its impact on the board effectiveness in performing its monitoring function. Using the same sample investigated in the first study, results indicate that board professional background diversity might have negative impacts on the board effectiveness in mitigating *REM*, while board social diversity is insignificantly related to earnings management.

The third study focuses on the impact of diversifying the board on its effectiveness in mitigating earnings management in family businesses for a sample of *FTSE All Share* UK listed companies. Based on data of 32 UK family-controlled firms listed during the period 2010-2017, findings show that board professional background diversity is positively associated with earnings management, while board gender diversity is insignificantly related to earnings management. Findings for the family businesses sample still emphasize the negative implications that board diversity might have in relation to performing the monitoring function.

The findings of this thesis are beneficial to regulators and policy makers as they highlight the negative implications of board diversity and ways to overcome those implications in both family and non-family settings.

Keywords: Corporate Governance, Board of Directors, Professional Background Diversity, Social Diversity, Gender Diversity, Accrual-based Earnings Management, Real Earnings Management, Family Business.

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List of Abbreviations

2SLS	The two-stage least squares regression
AAERs	Accounting and Auditing Enforcement Releases
AEM	Accrual-based earnings management
BRDACTV	Board activity
BRDIND	Board independence
BRDSIZE	Board Size
CEO	Chief executive officer
CFO	Cash flows from operating activities
COGS	Cost of goods sold
DA	Discretionary accruals
DISX	Discretionary expenses
DUAL	*CEO* Duality
FTSE	Financial Times Stock Exchange
GAAP	Generally Accepted Accounting Principles
GENDIV	Gender diversity
OLS	Ordinary least squares regression
ICB	Industry Classification Benchmark
IV	Instrumental variable
LSDV	Least squares dummy variable regression
LSE	London Stock Exchange
NDA	Non-discretionary accruals
OLS	Ordinary least squares regression
PEXPDIV	Professional background diversity
R&D	Research and Development
RBV	The resource-based view of the firm
REM	Real activities earnings management
ROA	Return on assets
SEC	Securities and Exchange Commission
SEW	The socioemotional wealth theory
SG&A	Selling, general, and administrative expenses
SOX	Sarbanes-Oxley Act
UK	The United Kingdom
US	The United States of America
VIF	Variance inflation factors

Statement of Copyright

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Dedication

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Chapter 1: Introduction

1.1 Preamble

Corporate governance has considerably evolved over many years to keep pace with the changing economic and social business environment. It has become an expansive topic and national codes have grown to reflect changing stakeholder priorities. The UK corporate governance code provides an world-leading example of those codes that have evolved from the early comprehensive codes of practice, the Cadbury code, focusing on the control and reporting functions of boards to the newly revised versions encompassing a much broader range of issues such as gender equality and ethnic representation. The main purpose of this thesis is to investigate how those corporate governance developments impact the functionality of the board of directors. In Particular, this thesis investigates the characteristics of the board of directors, specifically board activity and structure including independence and diversity, and their effect on the oversight function.

Corporate governance has received increasing emphasis both in practice and in academic research following the collapse of a number of corporations worldwide such as Coloroll and Polly Peck in the UK, Enron in the US and Parmalat in Italy (Mallin, 2019, p. 33; Mulcahy & Donnelly, 2015). Numerous reforms have been launched and enacted all over the world, for instance, The Cadbury Report with Code of Best Practice was issued at the end of 1992 in the UK and the United States enacted the Sarbanes-Oxley Act (2002) in July 2002, in response to those scandals. Nonetheless, The UK reform has been shown to outperform developments enacted in other countries[1] in terms of achieving high standards of corporate governance with relatively

[1] The Governance Metrics International (*GMI*) ranked the UK at the top of the list of countries showing average corporate governance score (FRC, 2006b).

low compliance costs (FRC, 2006b). The corporate governance reform in the UK, starting from the Cadbury Code (1992) through the succeeding changes, has influenced the developments of many codes across the world (Mallin, 2019, p. 31; Solomon, 2013, p. 50). These developments in UK corporate governance were initiated with the aim of improving the board of directors' ability to direct the firm and monitor its management effectively to deliver long-term success and provide accountability to shareholders (FRC, 2010b; García-Meca & Sánchez-Ballesta, 2009). This thesis investigates those developments specifically those related to characteristics of the board of directors and to what extent they enhanced the board monitoring function.

As part of the UK corporate governance developments, regulators and policy makers turned their attention to promoting diversity among the boards of directors in an effort to enhance their effectiveness in performing their functions. That development began in 2010 with a revised version of The UK Corporate Governance Code which introduced a new principle that requires the board to take into consideration the benefits of diversity, such as gender diversity, at the time of recruiting and hiring new board members (FRC, 2010c). Moreover, the preface (Paragraph 3) of the 2014 version of the UK Corporate governance code asserts that not only gender but also race, experience and approach are important when determining the appropriate balance of skills and attributes that are needed among the board of directors (FRC, 2014c). A more recent attempt by the UK Government to promote diversity on corporate boards has been reflected in the Hampton-Alexander Review (2017) and the Parker Review (2017), which recommend a voluntary target of females and ethnic minorities to be represented on the board of UK listed companies respectively. Most of the research that investigated the effectiveness of these reforms

recommendations focused on examining the effect of gender diversity on a narrow set of corporate outcomes, typically firm performance (Bernile, Bhagwat, & Yonker, 2017). However, there is far less research investigating the impact of gender diversity on earnings management especially earnings manipulations through real activities. Other diversity aspects than the gender one need also to be considered with their impact on the board effectiveness in performing its functions (Adams, de Haan, Terjesen, & van Ees, 2015; Hillman, 2015).

Moreover, previous research indicated that family-controlled firms adopts different governance practices from those employed in non-family firms due to the unique issues associated with family ownership (Alderson, 2012; Bennedsen, Gonzalez, & Wolfenzon, 2010). These distinctive practices are likely to impinge upon the reporting behaviour and the accounting practices employed by family firms (Paiva, Lourenço, & Branco, 2016). Due to theses distinctive features, it is worth investigating the effectiveness of promoting diversity among the board of directors in a different context like the family firms.

The corporate governance developments enacted in the UK have been to make the board of directors structurally and operationally more effective in performing its functions including the oversight of management in either listed companies with dispersed ownership or family-controlled corporations. One manifestation of the effective oversight of management is through constraining practices of earnings management, which is simply a deliberate attempt by managers to change the earnings figures to mislead some stakeholders (Goncharov, 2005, p. 1). Several motivations induce managers to engage in earnings management such as maximising their bonuses (Beneish, 2001; Healy, 1985; Laux & Laux, 2009) avoiding debt-covenant violation (Franceschetti, 2018, pp. 45-46), and meeting regulatory thresholds and analysts'

forecasts (Dechow & Skinner, 2000; Healy & Wahlen, 1999). Those motivations contribute to the earnings management problem. These motivations have raised scholars', practitioners' and regulators' concerns about the negative implications that earnings management could have on the quality of financial reporting especially after earnings management has been found in the core of the high-profile accounting scandals mentioned above (Goncharov, 2005, p. 1). Levitt Jr. (1998) and Chen, Elder, and Hsieh (2007), for example, see earnings management practices erode the quality of the financial reporting. As earnings management is considered a central issue affecting the quality of the financial reporting (Peasnell, Pope, & Young, 2000a), this thesis investigates this issue as an indicator of the quality of the financial reporting process and the effectiveness of the board of directors' monitoring function.

1.2 Study Objective and Questions

The first aim of this thesis is to investigate the impact of the characteristics of the board of directors on earnings management practices in the UK, whether these practices are based on accruals (*AEM*) or conducted using real activities (*REM*). It seeks to determine which of these characteristics influence executives' choice between accruals-based earnings management (*AEM*) and real earnings management (*REM*) for a sample of publically listed companies. Second, this thesis aims to investigate the incremental effect of promoting both professional background and social diversity among the board of directors in mitigating both accrual-based and real earnings management. Finally, it examines whether the effectiveness of promoting diversity among the board of directors in curbing earnings management holds in family-controlled firms. Therefore, the primary research questions are:

- Do boards of directors mitigate *AEM* and *REM* practices in the UK?

- Do characteristics of the board mitigate both *AEM* and *REM* or they mitigate one technique and causes executives to shift to the other?
- Does promoting professional background and social diversity among the board of directors in publically listed firms impact accrual-based and real earnings management?
- Does the impact of diversifying the board on earnings management differ in a family firm from that in a typically listed company?

1.3 Methodology

This thesis investigates the association between board characteristics and earnings management for *FTSE 350* companies listed on London Stock Exchange (*LSE*) during the period 2010-2014 and also for *FTSE All Share* family-controlled companies listed on *LSE* for the period between 2010 and 2017. It adopts the positivism philosophy of research as it looks for causal relationships between variables in order to create law-like generalisations and the deductive research approach as this research uses theories (the agency theory in the second and third chapters and the agency and socioemotional wealth in the fourth chapter) to develop hypotheses to be tested to reach a conclusion (Saunders, Lewis, & Thornhill, 2016, p. 135:147; Schroeder, Clark, & Cathey, 2016, p. 99).

Regarding dependent variables measurement, this research employs the cross-sectional version of the performance-adjusted (Kothari, Leone, & Wasley, 2005) model to proxy for accrual-based earnings management (*AEM*). Moreover, this thesis adopts cross-sectional models developed by Roychowdhury (2006) to measure *REM*. Specifically, it uses abnormal cash flow from operations (*CFO*) as a proxy for sales manipulations, abnormal production costs as a proxy for overproduction, and

abnormal discretionary expenses as a measure for cutting discretionary expenditures including research and development (*R&D*) and selling, general, and administrative (*SG&A*) expenditures.

Multivariate tests are employed to gauge the explanatory power of the board characteristics' variables against earnings management proxies. This thesis estimates the multivariate regressions using either the random effect method or the fixed effect method based on the Hausman (1978) specification test results. Finally, it employs the two-stage least squares (*2SLS*) approach to re-examine the relationship between the characteristics of the board and earnings management as a way of addressing and mitigating any potential endogeneity biases that might impact the results.

1.4 Contributions to the body of knowledge

This study makes the following contributions to the literature. First, reviewing the corporate governance and earnings management literature revealed that research that investigated the association between them considered only one technique either *AEM* or *REM*. Due to the crucial differences between *AEM* and *REM* (Roychowdhury, 2006), examining either type of earnings management activities in isolation cannot lead to an overall view of earnings management activities (Fields, Lys, & Vincent, 2001; Zang, 2012) and definitive conclusions whether corporate governance mechanisms are effective in curbing both techniques of earnings management or they mitigate one technique and cause executives to shift to using the other. Accordingly, this study contributes to the corporate governance and earnings management literature through examining the impact of several characteristics of the board of directors on both *AEM* and *REM* simultaneously.

Second, previous research indicated that much of the work on board diversity has focused on gender diversity and there are unanswered questions need to be addressed related to other forms of diversity and their effect on the board decisions (Adams et al., 2015; Hillman, 2015). Hence, this thesis tries to fill that gap through considering the impact of professional background diversity on the board effectiveness in performing its monitoring function. Third, literature revealed that various diversity aspects have a compound effect on corporate outcomes (Ararat, Aksu, & Tansel Cetin, 2015), nevertheless previous work on boardroom diversity typically considered one aspect of diversity (Adams et al., 2015; Hillman, 2015). Accordingly, this study considers two diversity aspects capturing the professional background and social diversity simultaneously with the aim of providing a clearer picture of the compound effect of board diversity on firms' earnings management.

Fourth, Chapter 4 investigates whether the effect of promoting diversity among the board of directors on corporate outcomes holds in family-controlled firms through examining the impact of both professional background and social diversity on the board effectiveness in performing its monitoring function in family-controlled businesses. Finally, this research also contributes to the scant literature of real earnings management in family firms (Ferramosca & Ghio, 2018, p. 123; Tian, Yang, & Yu, 2018) through considering the impact of board diversity on *REM* in addition to the *AEM*.

1.5 Thesis Structure

The remainder of this thesis is organised as follows: Chapter 2 provides a background for the thesis themes. Chapter 3 investigates the impact of the characteristics of the board of directors (independence, CEO duality, activity, and board size) on both

accrual-based and real earnings management practices for a sample of publically listed companies in UK. Chapter 4 examines the effectiveness and the incremental effect of promoting both educational and professional background diversity and social diversity among the board of directors in mitigating both *AEM* and *REM* for the same sample. Chapter 5 re-examines that effectiveness but in different context, which is the family firms' context. Chapter 6 presents a summary of the thesis and draws implications and conclusions. It also discusses the potential limitations and provides suggestions for future research. Tables are placed at the end of each chapter and the variables are defined in the appendices.

Chapter 2: Corporate Governance, Diversity and Earnings Management in UK Firms

2.1 Introduction

The UK is generally recognised as a world leader in corporate governance. The UK has a long and established history of corporate governance reform with the Cadbury Report (1992) representing the first attempt to formalize corporate governance best practice in a written document (Okoye, 2017, p. 173; Solomon, 2013, p. 48). It has influenced the development of many codes all over the world (Mallin, 2019, pp. 30-31). The Cadbury report and its following corporate governance developments represents a multi-stage reform beginning with separating to the roles of the chairman and the *CEO* to the most recent developments related to promoting diversity among the board of directors. One of the aims of those reforms is to enhance the effectiveness of the board of directors. The main purpose of this chapter is to outline the policy documents and principal codes of practice that have been developed within the UK agenda for corporate governance reform including codes and reports related to board diversity. It also discusses the unique characteristics of family firms that might impact the extent to which those reforms will be effective in improving the governance systems of family firms. Finally, it considers theoretical background underlying earnings management as one of the indicators of effective governance systems in both family and non-family systems.

This chapter is structured as follows: Section 2.2 presents a summary of the main UK corporate governance reforms; Section 2.3 reports diversity reforms; Section 2.4 discusses the distinctiveness and characteristics of family firms and challenges

facing them; Section 2.5 provides theoretical background underlying earnings management and finally, Section 2.6 concludes the chapter.

2.2 UK Corporate Governance Reforms

Corporate governance systems have evolved over many centuries. The development of those systems, in the UK as in other countries, was initially driven by corporate collapses and financial scandals. (Iskander & Chamlou, 2000, p. 5; Mallin, 2019, p. 31). This section presents the development of those corporate governance systems in the UK.

2.2.1 The Cadbury Report (1992)

In the early 1990s, the UK economy experienced negative growth and high inflation rates (Jones & Pollitt, 2002). The recession during that period brought an escalation of business collapses and financial scandals including Coloroll, Polly Peck, Bank of Credit and Commerce International (*BCCI*) and Maxwell (Clarke, 1993). The perception of general lack of confidence in the financial reporting of many UK companies, during that period, induced the UK Government to respond (Jones & Pollitt, 2002). In May 1991, the Financial Reporting Council (*FRC*), the London Stock Exchange (*LSE*), and the accountancy profession established the Committee on the Financial Aspects of Corporate Governance (Mallin, 2019, p. 33). The committee was chaired by Sir Adrian Cadbury and published its report in December1992 (Cadbury, 1992), which became widely known as the Cadbury Report. The Cadbury Report recommended a “Code of Best Practice” with which the boards of directors of all companies listed in the UK should comply, and utilized a “comply or explain” mechanism (Mallin, 2019, p. 33).

The Cadbury Report made a number of recommendations including (Cadbury, 1992):

- The board should meet regularly and monitor the executive management.
- The roles of CEO and chairman should be separated.
- The board should comprise at least three non-executive directors. The majority of them should be independent of management.
- The board should form a remuneration committee, consisting wholly or mainly of non-executive directors and chaired by a non-executive director.
- An audit committee should be established with a minimum of three members and a majority of independent nonexecutive directors.
- Firms should establish a nomination committee with a majority of non-executive directors.

The Cadbury Report specified that a new Committee should have been formed by the end of June 1995 to examine how far compliance with the Code of Best Practice had progressed, how far our other recommendations had been implemented, and whether there was a need to update the Code in line with emerging issues (Cadbury, 1992).

2.2.2 The Combined Code (1998)

Further UK reforms of corporate governance followed the Cadbury code, with the Greenbury Report (1995) suggesting guidelines for director remuneration; the Hampel Report (1998) concentrating on disclosure and best corporate governance practice (Greenbury, 1995; Hampel, 1998). In 1998, the Cadbury, Greenbury and Hampel recommendations were consolidated into one code called the UK Combined Code. The Combined Code addressed many issues relating to composition and operation of the board, directors' remuneration, accountability and audit, relations with shareholders,

and the responsibilities of institutional shareholders, and was applicable to all companies that were listed on the London Stock Exchange as from 31st December, 1998. All listed companies were required to report on how they had applied and compiled to the principles in the Combined Code in their annual report to shareholders with an explanation for any non-compliance to the code (Kwan, 2008).

2.2.3 The Combined Code (2003)

Both the Cadbury report and the Hampel Report indicated the need for an effective internal control system; however, they did not provide a guidance on what the system should look like (Jones & Pollitt, 2002). The Institute for Chartered Accountants in England and Wales (*ICEAW*) and the London Stock Exchange (*LSE*) discussed the need for a detailed guidance on companies' internal control. The Turnbull Committee was established by *ICEAW* with the aim of providing companies with general guidance on how to develop and maintain their internal control systems (Solomon, 2013, p. 58; Turnbull, 1999).

After a period of silence in media and popular interest in corporate governance issues, the subject has once again become highly debated in 2001, when there began a series of corporate scandals – Enron, WorldCom, and others – of large US companies which may be attributed to poor corporate governance (Jones & Pollitt, 2004). The fall of Enron, Worldcom, and other companies in United States also spurred the UK into reviewing its corporate governance code. Two reports were published in UK in 2003: the Higgs Report and the Smith Report (FRC, 2006b). The Higgs Report (2003) dealt specifically with the role and effectiveness of non-executive directors, making recommendations for amendments in the Combined Code. These recommendations included a definition of 'independence' and the proportion of independent non-

executive directors on the board and its committees (at least half of the board should be non-executive) and more sufficient and appropriate remuneration for non-executive directors. The report also concluded that the role of the senior independent director to be expanded to provide an alternative channel of contact to shareholders. This would enhance the abilities of non-executive directors in representing shareholders' interests and align the interests of shareholders and directors (Higgs, 2003; Solomon, 2013, p. 59). Also the report added emphasis on the process of nominations to the board through a transparent, fair, and rigorous process and evaluation of the performance of the board, its committees and individual directors (Higgs, 2003; Kwan, 2008).

At the same time as the Higgs Committee was conducting its work, a separate group was appointed by Financial Reporting Council (*FRC*) under the chairmanship of Sir Robert Smith, to develop further the guidance on audit committees included in the Combined Code (Morris, McKay, & Oates, 2009, p. 270). The resulting report "Audit Committees: Combined Code Guidance" (commonly referred to as the Smith Report) was published in 2003 (Smith, 2003). The main recommendations included in the report are as follows:

- the audit committee should consist of at least three 'independent non-executive directors, and that at least one member should have significant, recent and relevant financial experience;
- the audit committee should be provided with a written terms of reference and sufficient resources to undertake its responsibilities and duties;
- the audit committee should review the significant financial reporting issues and judgments contained in the financial reports;

- the directors' report should contain a separate section describing the role and responsibilities of the audit committee and the actions taken by the audit committee in discharging those responsibilities; and
- the chairman of the audit committee should attend the annual general meeting (*AGM*) to answer questions on the audit committee's activities report and issues within the scope of audit committee's responsibilities.

(Dewing, 2003; Smith, 2003).

Following the publication of Higgs Report in 2003, the Department of Trade & Industry (DTI) appointed a task force chaired by Dean Laura Tyson of the London Business School with the aim of determining the ways with which public companies can improve their recruitment, selection, and development of non-executive directors (Calder, 2008, p. 44). The taskforce recommendations were published in June 2003 having a title: Tyson Report on the Recruitment and Development of Non-Executive Directors (Tyson, 2003).

In 2003 the UK combined Code was revised to incorporate recommendations from reports on the role of non-executive directors (Higgs Report) and the role of the audit committee (Smith Report) (FRC, 2003). At this time the UK Government delegated the responsibility for publishing and maintaining the corporate governance code to the Financial Reporting Council (*FRC*), the independent regulator responsible for corporate governance and reporting (FRC, 2006b). The revised version of the Code introduced new provisions relating to the status and responsibilities of the chairman and chief executive and the structure of the board of directors and its main Committees. These new provisions suggested that the board should have strong presence both of executive and non-executive directors, with placing a particular emphasis on non-executives being ‘‘independent’’ in an effort to bring more objectivity to the decisions

made by companies. The new version of the Code also recommended that companies should not pay excessive remuneration to directors which displayed little relation to corporate performance (Pass, 2006; Solomon, 2013, p. 61). The new Combined Code was eventually published on 23 July 2003 and applied to all UK listed companies for accounting periods beginning on 1st of November 2003. Departure from the new Code provisions may be justified in particular circumstances, but it is still expected that listed companies will comply with them most of the time. The code provided some exceptions for smaller companies from full compliance, for example companies below the FTSE 350 are excepted from applying the recommendation that at least half of the board should consist of independent non-executives directors (Morris et al., 2009, p. 270). Speck and Tanega (2005) stated that the UK Combined Code, which published in 2003, forms the backbone of corporate governance in UK, whereas statutory law only plays a minor role; and that the Code is considered at that time the authoritative standard for good corporate governance in several countries.

2.2.4 The Combined Code (2006)

The UK combined code was further revised in June 2006 and incorporated a number of amendments to the combined code (2003). The main amendments made in the UK Combined Code include:

- enabling the chairman to be a member of the committee if he or she was considered independent on appointment as chairman, although he or she is not recommended to chair the committee;
- providing shareholders with the 'vote withheld' option on proxy appointment forms to enable shareholders to indicate if they have reservations on a resolution but do not want to vote against; and

- requiring companies to publish Information on proxy appointments on their websites where a vote has been taken on a show of hands

("Corporate governance update," 2007; FRC, 2006a; Kwan, 2008).

2.2.5 The Combined Code (2008)

The Combined Code was revised again in 2008 following the findings of a Review of the impact of the combined code being published by the FRC. Two amendments were introduced in 2008 (FRC, 2008): (1) removing the restriction on appointing a chairman who already chair a board of a FTSE 100 company; and (2) allowing the company chairman to be a member of the audit committee for smaller companies, where he or she was considered independent on appointment (Mallin, 2019, p. 36).

2.2.6 The UK Corporate Governance Code (2010)

The UK Combined Code was revised once more and became known as the "UK Corporate Governance Code" in 2010 (FRC, 2010c). The new revised code introduced six main changes to its previous version which were as follows: Firstly, new principles on the structure and selection of the board, including the need to appoint members on merit, against objective criteria, taking into consideration the benefits of diversity, such as gender diversity. These principles aim to encourage boards to be well balanced and avoid "group think", Secondly, new principles on the leadership of the chairman, the roles of the nonexecutive directors to provide constructive challenge, and the time commitment expected of all directors. The main goal of these new principles is to stimulate appropriate debate in the boardroom. Thirdly, regular development reviews should be implemented by the chairman with each director and board evaluation reviews in FTSE 350 companies should be externally facilitated at least every three

years. These two measures are intended to help enhance the board's performance and awareness of its strengths and weaknesses. Fourthly, all directors of FTSE 350 companies should be subject to re-elected every year in order to increase accountability to shareholders. Fifthly, the company's business model should be explained and the board should be responsible for determining the nature and extent of the significant risks it is planning to take in the future with the aim of improving the process of risk management. Finally, performance-related pay should be associated with the company's long-term interests and its risk policies and systems (FRC, 2010a).

2.2.7 The UK Corporate Governance Code (2012)

After two years, the FRC published a revised edition of the UK Corporate Governance Code in September 2012 which applied to reporting years beginning on or after 1st of October 2012 (FRC, 2012). The main amendments to the UK Corporate Governance Code included (FRC, 2013):

- new disclosure provisions on board diversity;
- a confirmation by the board that the annual report and accounts, taken as a whole, is fair, balanced and understandable and provides the information needed by shareholders to evaluate the company's performance, business model and strategy;
- a requirement that FTSE 350 companies put the external audit contract out to tender at least every ten years.

2.2.8 The UK Corporate Governance Code (2014)

The Code was further revised in September 2014 (FRC, 2014c), with the addition of more provisions in relation to remuneration, going concern and risk management,

and relation with shareholders. As for going concern and risk management, directors should (FRC, 2014a, 2014b):

- state whether they consider it appropriate to adopt the going concern basis of accounting in preparing the annual and half yearly financial statements and identify any material uncertainties to the company's ability to continue to do so over a period of at least one year from the date of approval of the financial statements;
- state whether they believe their company will be able to continue in operation and meet its liabilities as they fall due over the period of their assessment; assess the principal risks facing the company and explain how these risks are being managed or mitigated; and
- monitor the company's risk management and internal control systems and, at least annually, carry out a review of their effectiveness, and report on that review in the annual report.

For remuneration, the remuneration committee should place greater emphasis on ensuring that remuneration policies are designed to promote the long-term success of the company, and also companies should specify arrangements that will enable them to recover sums paid or withhold the payment of any sum when appropriate to do so. Finally regarding the relation with shareholders, companies should explain when a general meeting results how they intend to engage with shareholders when a significant percentage of them have voted against any resolution (FRC, 2014a, 2014b).

2.2.9 The UK Corporate Governance Code (2016)

In 2016, minor changes were made in the UK Corporate Governance Code, which were driven by the consequential changes required from the implementation of the

European Union's Audit Regulation (EU/537/2014), covering specific requirements regarding statutory audit of public interest entities, and Directive (2014/56/EU), covering the statutory audit of annual accounts and consolidated accounts (FRC, 2016c).

Minimal changes were made in section C.3 as the Code was already consistent with the majority of the Regulation and Directive. These changes include: first, new wording was added to Provision C.3.1 requiring the audit committee, to have competence relevant to the sector in which the company operates. Second, the reference in Provision C.3.7 to FTSE 350 companies putting the external audit contract out to tender at least every ten years was deleted as this requirement is now included in the Companies Act 2006 following revising legislation to implement the Directive and Regulation. Third, new wording was added to Provision C.3.8 specifying that the audit committee should give advance notice of any audit retendering plans (FRC, 2016b).

2.2.10 The UK Corporate Governance Code (2018)

Recently, a more focused version of the UK Corporate Governance code has been issued in July 2018 to reflect the changing business environment and help UK companies achieve the highest levels of governance (FRC, 2018b). The revised code is shorter and sharper than previous versions and builds on the findings from the FRC's Culture Report published in 2016 (FRC, 2016a). It places more emphasis on the value of corporate culture in building trust in the business and promoting engagement with the company's stakeholders (Mallin, 2019, p. 43). In its introduction, it states that *"a company's culture should promote integrity and openness, value diversity and be*

responsive to the views of shareholders and wider stakeholders" (FRC, 2018b, p. 1). The main changes include (FRC, 2018a, 2018b):

- Stakeholders: the 2018 version of the UK Corporate Governance Code includes a new provision to enable greater board engagement with the workforce to understand their views. The revised code also requires boards to describe on the annual report how they have considered the interests of other key stakeholders in board discussions and decision-making.
- The boardroom: the revised code places increased emphasis on importance of constructive challenge, specialist advice, and strategic guidance provided by the non-executive directors and that they should hold management to account. The new code also strengthens the role of the nomination committee on succession planning and developing a more diverse board. It requires nomination committee reports to include the gender balance of senior management and their direct reports. In addition, it asserts on the importance of external board evaluation for all companies and that nomination committee reports should include details of the nature and extent of an external evaluator's contact with the board and individual directors.
- Remuneration: the new code emphasises that remuneration committees should take into account workforce remuneration and related policies when setting the policy for director remuneration. Finally, it requires that directors exercise independent judgement and discretion on remuneration outcomes, taking account of wider circumstances and remuneration committee chair have served on a remuneration committee for at least 12 months before appointment.

2.3 Diversity Reforms

2.3.1 Gender Diversity Reforms

Increasing the share of females on boards has been on the public agenda for two decades in the UK (Doldor, 2017). The first official census for females on boards (the Female FTSE Board Report) was conducted in 1999 by the International Centre for Women Leaders at Cranfield University and showed only 6.3 percent female directors on UK's top FTSE 100 boards (Singh & Vinnicombe, 2001). Since the publication of the first census in 1999, the centre has continued reporting a regular measure of the number of female directors on the corporate boards of the UK's top 100 companies. In 2009, females made up only 12.2% of the members of the corporate boards of FTSE 100 companies and 7.3 per cent in of the members of the corporate boards of FTSE 250 companies (Sealy, Vinnicombe, & Doldor, 2009). During that time, the Financial Reporting Council (*FRC*) noted that the number of females on company boards was very low and accordingly in the 2010 revised UK Corporate Governance code included for the first time a principle, recognising the value of diversity in the boardroom, which states that:

> *"The search for board candidates should be conducted, and appointments made, on merit, against objective criteria and with due regard for the benefits of diversity on the board, including gender."*
>
> (FRC, 2010c, p. 13).

Concerned about the slow rate of progress with the representation of females on UK boards, the government tasked Lord Davies in summer 2010 to lead a review to identify the obstacles preventing more females reaching the boardroom and to make recommendations regarding what government and business could do to increase the

percentage of females on corporate boards (Davies, 2011). Following a wide consultation, Lord Davies' report, *Women on Boards*, was published in February 2011. The report made several recommendations including:

- The chairmen of FTSE 350 companies should state the percentage of females that they aim to have on their boards in 2013 and 2015 and FTSE 100 companies should aim for a minimum 25 percent females in the boardroom by 2015.
- Quoted companies should disclose each year the proportion of females on the board, females in senior executive positions, and female employees in the organizations as a whole.
- The FRC should amend the UK Corporate Governance Code to require listed companies to set up a policy on boardroom diversity, including measurable objectives for executing the policy, and disclose a summary of the policy and the progress made towards achieving the objectives each year.
- Chairmen should disclose in their companies' annual reports all relevant information about the company's appointment process and how it addresses diversity including a description of the search and nominations process.
- Executive search firms should draw up a Voluntary Code of Conduct addressing gender diversity and best practice, covering all relevant search criteria and processes regarding FTSE 350 board level appointments.

In May 2011, the *FRC* began consulting on possible revisions to the UK Corporate Governance Code that would require companies to disclose their policy on boardroom diversity and report against it each year, as recommended by the Davies Report (2011) and to consider the board's diversity amongst other factors, when

assessing its effectiveness. In October 2011, the *FRC* announced that these changes would be implemented in a revised version of the Code (FRC, 2011), which was published in 2012 (FRC, 2012).

The 2012 edition of the Code incorporated two main changes in relation board diversity. First, Provision (B.2.4), related to the disclosure of the work of the nomination committee in a separate section of the annual report, was amended to include in that section a description of the board's policy on diversity, including gender, any measurable objectives that it has set for implementing the policy, and progress on achieving the objectives. Second, section (B.6), related to the evaluation, included a new supporting principle requiring that the *"Evaluation of the board should consider the balance of skills, experience, independence and knowledge of the company on the board, its diversity, including gender, how the board works together as a unit, and other factors relevant to its effectiveness"* (FRC, 2012, p. 15). The 2012 changes, in support of Lord Davies recommendations, were retained in the 2014 and 2016 revised versions of the UK Corporate Governance Code (FRC, 2014c, 2016c).

In February 2016, the UK government appointed Sir Hampton to chair an independent review to continue the work of Lord Davies in the Women on Boards reports with the aim of ensuring that talented females at the top of business are recognised, promoted and rewarded. The review published a series of annual reports in 2016, 2017 and 2018 (Hampton-Alexander Review, 2016, 2017, 2018). It recommends a voluntary target of a minimum of 33% females' representation on *FTSE* 350 boards by 2020 and recommends also that *FTSE* 100 companies aim for a minimum of 33% females representation across their executive committee and direct reports to the executive committee by 2020.

Alongside the UK Corporate Governance Code, a number of other diversity reforms has been conducted, aimed to improve transparency and lead to progress on diversity in companies. In 2013, for example, the UK government legislated to require each quoted company to disclose annually in its strategic report a breakdown showing at the end of the financial year the numbers of each sex who were board directors, senior managers and total employees of the company ("Companies Act," 2006, Section 414C). In addition, the Financial Conduct Authority (*FCA*) introduced a new rule, DTR 7.2.8A(R), in 2016 to implement the new EU Non-Financial Reporting Directive (2014/95/EU) requirement for issuers to disclose their diversity policy in the corporate governance statement (FCA, 2019 DTR A).

2.3.2 Other Aspects of Diversity Reforms

Recently, attention has shifted to consider other aspects of diversity in addition to gender. In the 2014 edition of the UK Corporate Governance Code, the *FRC* added assertion in the its preface that not only gender but also race, experience and approach are essential when determining the appropriate balance of skills and attributes that are needed among directors to ensure effective engagement with key stakeholders (FRC, 2014c).

In late 2015, the UK government appointed Sir Parker to conduct an official Review with the aim of improving the ethnic and cultural diversity of UK Boards to better reflect their employee base and the communities they serve. The review published its final report "*A Report into Ethnic Diversity of UK Boards: Beyond One by '21'*" in October 2017 and states that "ethnic minority representation in the boardrooms across the FTSE 100 is disproportionately low, especially when looking

at the number of UK citizen directors of colour" (Parker Review, 2017, p. 7). The key recommendations made by Parker Review are as follows:

(i) Increasing the ethnic diversity of UK boards. The review recommended that Each FTSE 100 Board should have at least one director of colour by 2021; and each FTSE 250 Board should meet this target by 2024;

(ii) Developing candidates for the pipeline and planning for succession; and

(iii) Enhancing transparency and disclosure.

2.3.3 The latest UK Corporate Governance Code Diversity Reforms

The 2018 edition of the UK Corporate Governance Code represents a substantial increase in emphasis on diversity not only at the board level but also at the level of senior management. It encourages boards to think beyond gender diversity and to ensure nomination and practices are designed to promote diversity more broadly (Sealy, Page, Tilbury, & Opara, 2018). For example, Principle J of the 2018 Code states that

> *"Appointments to the board should be subject to a formal, rigorous and transparent procedure, and an effective succession plan should be maintained for board and senior management. Both appointments and succession plans should be based on merit and objective criteria and, within this context, should promote diversity of gender, social and ethnic backgrounds, cognitive and personal strengths"* (FRC, 2018b, p. 8).

The latest UK Corporate Governance Code also maintains the emphasis on considering diversity in the board evaluations process as stated by Principle L that

"Annual evaluation of the board should consider its composition, diversity and how effectively members work together to achieve objectives. Individual evaluation should demonstrate whether each director continues to contribute effectively" (FRC, 2018b, p. 8). In addition, the 2018 Code expands disclosure to cover diversity in the succession planning and board evaluation context. For instance, Provision 23 of the 2018 code (FRC, 2018b) addresses the recommendation of the Hampton-Alexander Review that *"all FTSE 350 companies disclose in their Annual Reports the gender balance on the Executive Committee and Direct Reports to the Executive Committee"*(Hampton-Alexander Review, 2017).

In overall, the aim of the diversity reforms is for companies to deepen their understanding of how diversity can affect their business and encourage them to take a more strategic, multi-faceted approach to diversity. Authors of "Board Diversity Reporting", published by the *FRC* in September 2018, expect that the combination of the new reporting requirements in DTR 7.2.8A(R) and in the 2018 Code brings a significant shift in the quality of diversity reporting and provide greater insight into how companies enhance diversity in practice (Sealy et al., 2018).

2.4 Family Business in the UK

2.4.1 Family Business Definition

There is no single legal definition of a family business and scholars and experts tend to define family businesses in several ways (Drake, 2009). Astrachan, Klein, and Smyrnios (2006, p. 167) indicated that *"A definition of family is often missing."* Astrachan and Shanker (2003), for instance, created a range of family business definitions from a broad, inclusive definition to a narrow and more exclusive one based

on the perceived degree of family involvement in the business. The first definition is the most inclusive one, where some family participation in the business and family having control over the business' strategic direction are required in order for the business to be considered as a family business. The middle one narrows the family business definition by requiring that the business owner has an intention to pass the business on to another family member and that the descendent takes an active role in running the business operations. Finally, the narrowest one defines the family business as the business that has multiple generations working in the business at various levels probably involving the "*founder as chairman, two or three siblings in top management, one sibling with ownership but no day-to-day responsibilities, and younger cousins in entry-level positions."* (Astrachan & Shanker, 2003, p. 212).

In an effort to reach a commonly agreed definition of a family business, the European Commission suggested that in order to be useful, the definition must be simple, clear and easily applicable and should be comparable between countries (European Commission, 2009). The European Commission adopted the one formulated by the Finnish Working Group on Family Entrepreneurship (set up by the Ministry of Trade and Industry of Finland in 2006) as that definition has been widely accepted and has the advantage of being comprehensive and operational. According to that definition, a firm is considered a family business if:

> *(1) The majority of decision-making rights is in the possession of the natural person(s) who established the firm, or in the possession of the natural person(s) who has/have acquired the share capital of the firm, or in the possession of their spouses, parents, child or children's direct heirs.*
>
> *(2) The majority of decision-making rights are indirect or direct.*

(3) At least one representative of the family or kin is formally involved in the governance of the firm.

(4) Listed companies meet the definition of family enterprise if the person who established or acquired the firm (share capital) or their families or descendants possess 25 per cent of the decision-making rights mandated by their share capital. *(European Commission, 2009, p. 10)*

The Institute for Family Business in UK adopts the European definition of a "Family Business" (IFB, 2019) and accordingly the current research as well.

2.4.2 The Distinctiveness of Family Firms

Family companies have several positive and negative features that are related to the complex organisational structure of the business where family relationships have to be managed in addition to business relationships. They exhibit a number of strengths compared to their counterparts including:

- *Commitment.* Families have clear identities and show the highest dedication in seeing their business grow, prosper, and get passed on to next generations. Consequently, family members tend to identify with the family firm and are usually willing to work harder and reinvest share of their profits into the business to allow it to grow in the future (Cadbury, 2000; IFC, 2018).
- *Knowledge Continuity.* Family firms tend to pass their accumulated knowledge, experience, and skills from one generation to the next. This provides them with the necessary tools to run their business and ensures that good business policies are held on to (IFC, 2018).

- *Reliability and Pride*. Family firms are more likely to pursue long-term financial and human capital strategies than those in non-family firms and they are more concerned with the reputation associated with their output (Cadbury, 2000; Colli & Rose, 2008, p. 210). They strive to enhance the quality of their products and/or services and to maintain a good relationship with stakeholders such as employees, customers, suppliers, community, etc. (IFC, 2018).
- *Reduced Agency Costs*. Since the family both owns and manages the business, family firms benefit from reduced agency costs as feelings of trust and unity within the family helps minimize monitoring costs as well as the need for performance-related rewards (Cadbury, 2000; Colli & Rose, 2008).

Family firms also show some weaknesses that are especially relevant to their nature. Some of these weaknesses are:

- *Complexity*. Family firms are usually more complex in terms of governance than firms with no family involvement as family relationships have to be managed in addition to business relationships (Cadbury, 2000). Family members play several roles within their business, which can sometimes lead to a non-alignment of incentives among all shareholders (IFC, 2018).
- *Informality*. Firms' founders and their immediate family may well be able to manage their relationships successfully as the business hierarchy might match that of the family (Cadbury, 2000). As the family and its business grow larger, this straightforward pattern of relationships may not hold. The continued existence of a firm as a family business rests on maintaining relationships within a widening family circle (IFC, 2018).

- *Minority Shareholders*. Family owners, as large stockholders, are known to extract private benefits and use their control over the firm to use its resources for their own benefit (DeAngelo & DeAngelo, 2000). They may approve procedures that lead to the expropriation of minority shareholders through excessive compensation schemes and dividends in favour of family members (Mukherjee & Padgett, 2006).

2.4.3 Characteristics of the family businesses in the UK

Family businesses are vital to the UK economy. In 2016, there were 4.8 million family-run enterprises in the UK comprising 87 per cent of all private sector firms in the country (IFB, 2019). It was estimated that they earned £1.4 trillion in revenue in 2016, nearly 35.2 per cent of total private sector turnover earned in the UK in the year. They create substantial proportion of the UK GDP. Oxford Economics estimates that they generated a £519 billion gross value added contribution to UK GDP in 2016, around 26.5 per cent of total UK GDP (IFB, 2019). Family businesses are considered an important source of revenue for the Exchequer. According to Oxford Economics estimates, they paid £149 billion in taxes in 2016, around 21.5 per cent of total government revenue raised in that year (IFB Research Foundation and Oxford Economics, 2018). They are considered also an important source of employment as they employed about 12.2 million people in 2016, which is 35.3 per cent of all UK employment (IFB, 2019).

Family businesses are more prevalent among smaller firms than others. They made up 59 per cent of small businesses while only 10.9 per cent of large firms were family run (IFB Research Foundation and Oxford Economics, 2018). This indicates that the proportion of firms that are family run declines with firm size. Franks, Mayer,

Volpin, and Wagner (2009) pointed out that firms usually need to raise external funds in order to grow. The firm's need for external funds, combined by the owners' desire to diversify wealth, dilutes family ownership and accordingly firms become public companies, run by professional managers and owned by dispersed shareholders.

Regarding the family businesses industrial concentration, they are more concentrated in some industries than others. For example, in 2016, they represent 96.1 per cent of the private sector firms operating in the agriculture and extraction industries. Construction ranked second with 93.4 per cent of the total. They are under-represented in industries such as financial services and utilities and waste management (IFB Research Foundation and Oxford Economics, 2018). A number of factors have been suggested to explain variances in the concentration of family businesses across industries. Firms operating in the utilities sector are in general former state-owned monopolies characterized with high capital intensity and regulation, which constitute difficulties of entry for family businesses (Poutziouris, 2006). In addition, Franks, Mayer, Volpin, and Wagner (2012), argued that the need to raise external finances and higher mergers and acquisition (*M&A*) activity are the primary reasons for the dilution of family ownership. Accordingly, higher rates of family ownerships tend to present in industries that are less reliant on capital expenditure or have lower levels of *M&A* activity.

Geographically, three areas –North East, Yorkshire and the Humber, and East Midlands – had concentrations of family firms that were 90 per cent or higher in 2016. During the same year, London had the lowest concentration of family firms at 80.1 per cent (IFB Research Foundation and Oxford Economics, 2018). This variance in the concentration of family businesses across regions highlights the importance of families businesses to the economies of regions that are further from the capital.

2.4.4 Challenges facing family firms

Family businesses face a range of challenges that hamper their growth and development. Some of these challenges arise from the environment in which firms operate such as access to finance without losing control of the firm, taxation and regulation in terms of unawareness of policy makers of the specificities of family businesses. Others develop as a consequence of the family firm's internal matters such as balancing the business, family and ownership aspects and succession (European Commission, 2009; Siakas, Naaranoja, Vlachakis, & Siakas, 2014).

Family firms also face the challenge of attracting and retaining a (skilled) workforce. According to the UK family business survey conducted by PWC in 2016, some of the respondents indicated that they struggle to attract and retain qualified persons (PWC, 2016). Recruiting and retaining skilled staff is more likely to be a challenge for family businesses than non-family businesses (IFB Research Foundation and Oxford Economics, 2018). In most family businesses, there are often limited opportunities available to employees for professional career progression as family employees occupy the leadership positions within the business, inducing many talented and ambitious employees to move on. The issue of attracting and recruiting suitable persons is not limited to employees; however, it extends to directors. Some business owners hesitate to shape active boards, as they do not know how to find qualified directors or fear that experienced people will not serve. Multi-generational firms face the same issue of recruiting outside directors capable of representing and reconciling the disparate interests of each generation or branch of the family (Aronoff & Ward, 2011).

2.5 Earnings Management

2.5.1 Definition of Earnings Management

Several definitions of earnings management have been offered by researchers. One of the most commonly cited definitions of earnings management in the literature was provided by Schipper (1989). She defined earnings management as a *"purposeful intervention in the external financial reporting process, with the intent of obtaining some private gain"* (Schipper, 1989, p. 92). Another commonly cited definition was by Healy and Wahlen (1999), who stated that *"earnings management occurs when managers use judgment in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers"* (Healy & Wahlen, 1999, p. 368). Although these two definitions differ in wordings, they have some commonality as both are difficult to operationalize directly using attributes of reported accounting numbers since they focus on managerial intent, which is unobservable (Dechow & Skinner, 2000).

Moreover, Ronen and Yaari (2008) provided a comprehensive definition for earnings management that differentiates between the two main activities to manipulate earnings: accrual-based and real activities. They defined earnings management as *"a collection of managerial decisions that result in not reporting the true short-term, value-maximizing earnings as known to management. Earnings management can be Beneficial: it signals long-term value; Pernicious: it conceals short- or long-term value; Neutral: it reveals the short-term true performance. The managed earnings result from taking production/investment actions before earnings are realized, or making accounting choices that affect the earnings numbers and their interpretation after the true earnings are realized"* (Ronen & Yaari, 2008, p. 27).

Finally, Scott (2015) also emphasized both the accrual-based and real activities earnings management in the following definition: *"Earnings management is the choice by a manager of accounting policies, or real actions, affecting earnings so as to achieve some specific reported earnings objective"* (Scott, 2015, p. 445). The author of this thesis adopts the later definition, as it considers the two different means of earnings manipulation: accrual-based and real activities.

2.5.2 Earnings Management Activities

2.5.2.1 Accrual-based Earnings Management (*AEM*)

Accruals-based earnings management (*AEM*) involves executives' intervention in the financial reporting process through the exercise of their judgment and discretion regarding accounting choices (Kothari, Mizik, & Roychowdhury, 2016). Executives can manipulate earnings through using accounting choices allowed under promulgated principles to "obscure" the true underlying performance of the firm (Dechow & Skinner, 2000). Therefore, *AEM* does not impact the firm's underlying economics but involves adjusting the accounting presentation of these economics (El Diri, 2018, p. 13). Teoh, Welch, and Wong (1998a) indicated that executives could manipulate earnings using *AEM* by employing several techniques including:

1. *Accounting Method Choice*. The choice of accounting methods affects the timing of revenues and expenses recognition. For example, the choice of straight-line depreciation method charges lower depreciation expenses more than accelerated depreciation in the initial periods.
2. *Accounting Method Application/Discretionary Estimates*. Even after executives have selected the accounting methods, they can exercise discretion in terms of how the accounting principles are applied. For instance, executives

have discretion in the estimates of useful lives and residual values of depreciable assets, lives of intangibles and uncollectible rate on receivables.

3. *Accounting Method Timing*. Executives has discretion over how and when events are recognized. For instance, executives may classify an indirect cost as a product cost rather than a period expense to avoid recognise the expenditure as an operating expense in the income statement.

2.5.2.2 Real Activities Earnings Management (*REM*)

Real activities earnings management (*REM*) refers to executives' actions that deviate from normal business operations conducted with the objective of meeting certain earnings thresholds (Kothari et al., 2016; Roychowdhury, 2006). *REM* involves manipulating the company earnings through several activities such as accelerating sales through more lenient credit terms and higher price discounts to customers, overproduction to decrease the cost of sales, and manipulating discretionary expenses like decreased investment in research and development (*R&D*), advertising, and employee training (Roychowdhury, 2006). Cohen and Zarowin (2010) argued that such activities sacrifice the firm's future cash flows for current period income and thus negatively influence its operating performance and stock returns in the future. However, Gunny (2010) suggested that *REM* could have a positive impact on the firm's future performance when it is used to meet some benchmarks that enhance the firm's credibility and reputation with stakeholders.

Prior literature indicated that managers may prefer to engage in *REM* rather than to manipulate earnings using accruals (*AEM*) for several reasons. First, *REM* is less subject to the scrutiny of regulators and auditors, while *AEM* is more likely to draw auditor or regulatory scrutiny (Graham, Harvey, & Rajgopal, 2005). Real

operations are more firmly within the domain of managers' expertise rather than that of investors and/or auditors. This provides managers incentives to engage in *REM* in lieu of, or in addition to, *AEM* (Kothari, Mizik, & Roychowdhury, 2015). Second, relying on *AEM* solely is risky from managers' point of view. *REM* occurs throughout the year, while *AEM* occurs at the end of the fiscal year. If reported income at year-end falls below the threshold and all *AEM* choices to meet that threshold are exhausted, real activities cannot be manipulated at that time (Roychowdhury, 2006). Finally, managers may have limited flexibility to manage earnings using accruals only. Managers that utilised *AEM* extensively in prior years are likely to switch to *REM* in the current period if a motivation for managing earnings still exists (Gunny, 2010). The balance sheet represents a constraint that limits the management ability to manage earnings using accruals each year as it accumulates the effects of prior accrual manipulation (Barton & Simko, 2002).

2.5.2.3 Classification-Shifting Earnings Management

Executives may sometimes engage in classification-shifting instead of *AEM* or *REM* when they are more concerned about net income rather than earnings' numbers (El Diri, 2018, p. 16). Executives employ the classification-shifting technique by shifting expenses down from recurring items (operating expenses) to non-recurring and exceptional items, and therefore inflate their core earnings number instead of bottom line net income (Zalata & Roberts, 2016).

Classification-shifting is distinct from *AEM* and *REM* in several ways: First, classification shifting does not alter net income, and thus this technique is pointless to financial statement users focusing solely on net income (McVay, 2006). Second, since classification-shifting net income does not change, it is less subject to the scrutiny of

auditors, outside monitors and regulators (Athanasakou, Strong, & Walker, 2009; McVay, 2006). Finally, classification-shifting does not affect future earnings as there are no accruals which reverse over time or loss of future revenue from forgone opportunities (Zalata & Roberts, 2016).

This thesis focuses on investigating the impact of board characteristics on earnings management techniques that overstate or deflate reported net income (i.e. *AEM* and *REM*). As Classification-shifting earnings management does not change the net income figures, it is not empirically tested in this thesis.

2.5.3 Earnings Management Motives

Earnings management literature has discussed numerous incentives that motivate executives to engage in earnings management. The most commonly discussed incentives to earnings management are management compensation contracts, debt covenant considerations, political and regulatory considerations, meeting expectations, and stock and bond offerings (Franceschetti, 2018, pp. 44-49).

Management compensation schemes create incentives for executives to choose accounting procedures and accruals to maximise the value of their bonuses (Healy, 1985). Managers tend to choose overstating their firms' earnings to maximise the value of their bonuses when they expect earnings to fall between the upper and lower limits of their bonus plan. However, when the bonus plan's upper limit is largely met, their incentive shifts toward reducing earnings to increases their expected future award (Holthausen, Larcker, & Sloan, 1995).

Debt contracts may also motivate executives to manipulate earnings. Debt contracts typically contain covenants to protect against any actions undertaken by managers that are against the lenders' best interests, such as additional borrowing and

excessive dividends, which dilute the security of existing lenders (Scott, 2015, p. 454). Violating those covenants can impose heavy costs on the firm, such as higher interest rates and reduced future ability to raise financing. Managers, therefore, are expected to avoid violating them. Earnings management literature indicated that they may manipulate earnings upward when their firms are close to debt covenant violation (Franceschetti, 2018, pp. 45-46).

Earnings management research suggests also that political and regulatory considerations induce firms to manipulate earnings (Healy & Wahlen, 1999). For instance, Jones (1991) found that companies seeking import relief tend to engage in income-decreasing earnings management during the period of the import-relief investigations. Key (1997) also showed that firms in the TV industry exercised income-decreasing discretionary accruals to mitigate the effects of political scrutiny and potential regulation.

Earnings management studies have also shown that executives manage earnings to meet the expectations of investors and other stakeholders (e.g. Bartov, Givoly, & Hayn, 2002; Burgstahler & Dichev, 1997). Firms that meet or beat their earnings expectations enjoy a higher return than others that fail to do so (Bartov et al., 2002), while firms with a negative earnings surprise suffer a significant return decrease (Skinner & Sloan, 2002). Failure to meet investors' earnings expectations thus has severe consequences in the form of direct effect on the firm's share price and cost of capital and an indirect effect through manager reputation (Scott, 2015, pp. 456-457). Consequently, meeting earnings expectations and maintaining reputation are considered powerful incentives to earnings management.

Issuing new or additional shares or bonds to the public can create incentives for managers to manipulate earnings to maximise the amount received from the share

issue (Scott, 2015, p. 457). Earnings at initial public offerings (*IPOs*) are valuable because investors demand to know earnings information before buying the *IPO's* stock and they subsequently will use *IPO's* earnings as a baseline for future assessments to judge the firm's growth (Ronen & Yaari, 2008, p. 147). All these reasons, in addition to the high information asymmetry between insiders and outside investors at *IPOs* (Fan, 2007), may drive managers to manipulate earnings in order to influence the valuation of their firms in the market. Previous studies showed also that firms engage in income-increasing earnings management in the year around the time of the seasoned equity offerings (*SEOs*) to increase the offering proceeds (Cohen & Zarowin, 2010; Teoh, Welch, & Wong, 1998b). Similarly, Chang, Tseng, and Chang (2010) and Liu, Ning, and Davidson III (2010) found that bonds issuers generally manage earnings upward in the issuing year to promote their bonds and to reduce the issuing costs.

2.6 Conclusion

This chapter has several purposes. First, it reviews the main corporate governance and diversity reforms in UK. Reviewing reforms of corporate governance in the UK shows that it has evolved from the reactive phase when the development of governance codes has often been driven by a corporate collapse, financial scandal, or similar crisis to the proactive phase in which its development has been driven by the need to restore investor confidence in capital markets. Diversity reforms also have passed through different stages from focusing only on gender in its early development to considering multiple aspects of diversity among the board of directors and senior management.

In addition, this chapter addresses the characteristics of family firms that make them distinctive from non-family firms. It also considers the challenges that family

firms face that might impact the effectiveness of their governance systems and their ability to promote diversity among their boards of directors.

Finally, this chapter considers earnings management as one of the indicators of effective governance systems and discusses its activates and the motives to employ those activities. In overall, this chapter serves as the theoretical basis for the following three empirical chapters.

Chapter 3: The Impact of Board Characteristics on Accrual and Real Earnings Management

3.1 Introduction

The beginning of the 21st century witnessed the collapse of a number of major corporations in the United States and other countries such as Enron, WorldCom, Tyco, and Parmalat. A main cause of such collapse may be attributed in part to a weakness in these companies' corporate governance systems resulting from the excessive concentration of power in the hands of top *management* (Epps & Ismail, 2009; IFAC, 2003). The collapse of these corporations focused international attention on the need for developing and implementing effective corporate governance mechanisms. As a response to these corporate failures, the United States enacted the Sarbanes-Oxley (SOX) Act on July 2002, whereas in January 2003 the United Kingdom updated its Combined Code to incorporate recommendations from reports on the role of non-executive directors (the Higgs Report, 2003) and the role of the audit committee (the Smith Report, 2003). These reforms in corporate governance aimed to enhance the performance of corporations by aligning the interests of directors and other stakeholders and motivating managers to maximize firm value instead of pursuing their personal objectives. They also aimed to protect investors through providing the means for monitoring managers' behaviour and limiting their abuse of power over corporate resources (Ahmed, 2013; Bushman & Smith, 2003), and to provide a degree of confidence that is essential for the proper functioning of the market economy (OECD, 2004).

An effective corporate governance is expected to encompass the provisions and mechanisms that guarantee the assets of the firm are managed efficiently and in the interests of the providers of finance and mitigate the inappropriate expropriation of

resources by managers or any other party to the firm (La Porta, Lopez-De-Silanes, Shleifer, & Vishny, 2002; Shleifer & Vishny, 1997). It should lead to a greater accountability and improve the quality and reliability of financial reporting through alleviating the opportunistic behaviours of management (Ashbaugh, Collins, & LaFond, 2004; González & García-Meca, 2014; Lo, Wong, & Firth, 2010; Watts, 2003), which in turn will help maintain and enhance investors' confidence in the integrity of capital markets (OECD, 2004).

Accordingly, to achieve a sustainable corporate performance, governance mechanisms should ensure the implementation of two essential functions: the oversight and the managerial functions. The oversight function is assumed by the board of directors and is concerned with the board's duty to oversee management to make sure that it is acting in the best interests of the company and its shareholders. The managerial function is delegated to management and consists of achieving operational efficiency, enhancing the quality, reliability, and transparency of financial reports, and ensuring compliance with applicable laws, regulations, rules, and standards. The effectiveness of the managerial function depends on the alignment of management's interests with those of shareholders (Rezaee, 2007). Therefore, appropriate corporate governance mechanisms are needed to eliminate the potential conflicts of interest between the management and the owners. Executive compensation is considered a crucial corporate governance mechanism designed to align management's interests with those of shareholders (Sapp, 2008). To work effectively in aligning these interests, compensation should be based on performance results, such as net income and market valuation, as a way of determining the effort extended by executives and connecting it to their compensation (Petra & Dorata, 2008). However, such compensation may induce management to manipulate reported earnings to

increase their bonuses (Beneish, 2001; Healy, 1985; Laux & Laux, 2009). Managers may also manipulate earnings to meet regulatory thresholds and analysts' forecasts (Dechow & Skinner, 2000; Healy & Wahlen, 1999), or to smooth income by maintaining it at a steady level to secure their employment (DeFond & Park, 1997). In addition, they have incentives to manage earnings to influence the potential contractual outcome (Watts & Zimmerman, 1990). For example, they may manage the reported earnings to avoid violating debt covenants.

Previous research indicates that management can manipulate earnings through the use of accounting choices allowed under Generally Accepted Accounting Principles (*GAAP*) to "obscure" or "mask" the true performance of the firm (Dechow & Skinner, 2000). This use of within-*GAAP* choices is referred to accrual-based earnings management (hereafter: *AEM*). Management can also manipulate earnings through adjusting real activities by changing the timing or structuring of an operating, investing, or financing decision (Badertscher, 2011; Gunny, 2010; Schipper, 1989). This type of earnings management is known as real activities earnings management (hereafter: *REM*).

Existing research has traditionally concentrated on analysing the impact of corporate governance mechanisms on *AEM* (e.g. Habbash, Sindezingue, & Salama, 2013; Klein, 2002; Peasnell, Pope, & Young, 2005; Xie, Davidson III, & DaDalt, 2003). Research findings indicate that *REM* is becoming more dominating in today's business environment (Graham et al., 2005). Few studies addresses the role of corporate governance in mitigating recently dominating type of earnings management (*REM*). Therefore, this study provides a further analysis of the impact of board composition on *REM* for a sample of companies listed on London Stock Exchange (*LSE*) during the period 2010-2014. It also examines the differences in the impact of

board characteristics on both *AEM* and *REM*. Briefly, the study findings show that board independence significantly constrains earnings management whether reported earnings are manipulated through accruals or real activities. Findings also indicate that board size and *CEO* duality are negatively associated to *REM*. Further, no significant relationship is found between the number of board meetings and the two techniques used for managing companies' earnings.

This study contributes to the literature in several ways. First, it adds to the literature that examines the role of corporate governance in mitigating *REM* (e.g. Garcia Osma, 2008; Kang & Kim, 2012; Visvanathan, 2008). One of the few studies that addressed this role was conducted in UK but considered the impact of only one dimension of the board (independence) on one of the *REM* activates, which is *R&D* manipulation (Garcia Osma, 2008). Others were conducted in different legal and institutional environments (e.g. US and Korea) where the results are not expected to hold in UK due to the differences in promulgated accounting principles and corporate governance regimes[1] (e.g. Kang & Kim, 2012; Visvanathan, 2008). Second, a review of the literature reveals that studies that investigated the association between corporate governance and earnings management considered only one technique either *AEM* or *REM*. Examining only one technique of earnings management at a time cannot lead to an overall view of earnings management activities (Fields et al., 2001; Zang, 2012). In other words, examining either type of earnings management activities in isolation cannot lead to definitive conclusions whether corporate governance mechanisms are effective in curbing earnings management or they mitigate one technique and cause executives to shift to the other one. Accordingly, this study examines the impact of board characteristics on both *AEM* and *REM* simultaneously.

[1] For instance, differences in corporate governance compliance approaches between the UK and the US (principles-bused vs. rules based approach).

The remainder of the chapter is organised as follows. Section 2 provides the theoretical framework that has been employed by prior research in the areas of corporate governance and earnings management. Section 3 reviews the related literature and presents the study hypotheses. Section 4 discusses the data and the empirical methodology. Section 5 provides a detailed discussion of the measures used to proxy for the study variables. Section 6 shows the main results, and finally section 7 offers conclusions.

3.2 Theoretical Framework

This section establishes the theoretical framework by focusing on the agency theory as this theory best explains management opportunistic behaviour due to the separation of ownership from control in public companies (El Diri, 2018).

Agency theory has dominated corporate governance research in social sciences in the last few decades (Filatotchev, Jackson, & Nakajima, 2013; Filatotchev & Nakajima, 2014; Zattoni, Douglas, & Judge, 2013). It was first introduced in 1970s by Alchian and Demsetz (1972) as a development from the theory of the firm and further developed by Jensen and Meckling (1976).

An agency relationship is defined as a relationship between a one or more persons [called the principal(s)] and another person [called the agent] under a contract in which the principal(s) engage(s) the agent to perform some services on their behalf which involves delegating some decision making authority to the agent (Jensen & Meckling, 1976; Ross, 1973). Agency theory is based on the assumption that the interests of these two parties [the principal(s) and the agent] are conflicting and that each party is expected to act in its own interest. Jensen and Meckling (1976) asserted that the agency problem can occur in all cooperative efforts in all organisations and at every level of management in organisations, where a principal-agent relationships do

exist. They pointed out that the relationship between shareholders and managers of a corporation fits the definition of the agency relationship and that managers (agents) may use the delegated authority in their hands to maximise their own utility at the expense of the shareholders.

Two problems are occurring in the agency relationship with which agency theory is concerned. The first is the problem that arises when the goals of the principal and agent are conflicting and it is difficult or expensive for the principal to verify the agent activities or to make sure that the agent behaved properly. The second is the problem that arises when the principal and agent have different attitudes toward risk, which can lead to different preferences to accept risk (Eisenhardt, 1989). Jones (1995) suggested that there are two causes for agent failure to properly pursue the interests of the principal: Moral hazard and adverse selection. Moral hazard exists due to a lack of effort (shirking) on the part of the agent; In other words, the principal cannot verify the agent's effort appropriately. Adverse selection exists when the principal cannot completely verify the skill or abilities that the agent claimed to have either at the time of hiring or while the agent is working (Eisenhardt, 1989). Gomez-Mejia and Wiseman (2007) indicated that the best solution to mitigate the effects of moral hazard and adverse selection would occur if alignment of interests between principals and agents were assured without any added costs. However, due to information asymmetry between the principal and the agent, principals cannot assume an agent’s continued cooperation, and therefore must incur some type of costs in order to mitigate the potential for moral hazard and adverse selection. These costs that are incurred to help mitigate agency problems are called agency costs and are defined as the sum of the monitoring expenditures by the principal, the bonding expenditures by the agent, and the residual loss (Jensen & Meckling, 1976). According to agency theory, the principal

can limit divergence from his/her interests by establishing appropriate incentives for the agent, and by incurring monitoring costs to monitor agent's actions. These costs may include costs such as mandatory audit costs (Nikkinen & Sahlström, 2004), investment in governance structures, formal procedures, information systems, and other oversight processes that help mitigate opportunistic behaviour (Subramaniam, 2006). Further, the agent may spend resources (bonding costs) to guarantee that he/she will not take certain actions that would harm the principal, or to ensure that the principal will be appropriately compensated if he/she does take such action. For example, corporate managers (as agents) could sign contracts indicating that they will always take the action that maximises shareholders' (as principals) wealth (Denis, 2001). That is, the agent may incur *ex-ante bonding costs* in order to win the right to manage the resources of the principal. Despite these incurred costs, it is recognized that some divergence between the agent's actions and the principal's interests may remain. Insofar as this divergence reduces the principal's welfare, it can be viewed as a *residual loss* (Hill & Jones, 1992).

Van Puyvelde, Caers, Du Bois, and Jegers (2012) pointed out that in order to minimise agency costs and ensure agent-principal interest alignment, principals seek to motivate agents to act in their interest through monitoring and incentive alignment. First, the principal may try to align the interests of his agent with his own objectives by offering a contract in which the compensation scheme is changed from "effort-based pay" to "outcome-based pay" so that the principal and the agent share a common interest in the performance of the organization (Caers et al., 2006). Second, the principal can increase the level of monitoring on the agent to improve the information he possesses about management activities but he has to take into account the possibility that tighter monitoring may reduce work effort (Frey, 1993). Further, Davis,

Schoorman, and Donaldson (1997) asserted on the importance of using governance structures as monitoring mechanisms. They showed that boards of directors keep potentially self-serving managers in check by performing audits and performance evaluations. Boards communicate shareholders' objectives and interests to managers and monitor them to keep agency costs in check. Independent non-executive board members are desirable to ensure that proper management oversight occurs.

3.3 Literature Review and Hypotheses Development

3.3.1 Board Independence

3.3.1.1 Conceptual and theoretical background

One of the roles of the board of directors is to monitor the firm's management performance, with the aim of protecting shareholders' interests (Mallette & Fowler, 1992). Fulfilling this role adds many responsibilities to the board of directors relating to hiring, assessing, and firing top management, providing expert advice to management, ratifying on major decisions, and keeping shareholders informed about their corporation (Fama & Jensen, 1983; Felo, 2001; Iqbal & Strong, 2010). One factor that might affect the ability of the board in fulfilling its role is the board's composition (Ezzamel & Watson, 2005; Fama, 1980).

Board composition refers to the different kinds of directors that participate in the work of the board. Typically, Board members are classified as either executives or non-executives. An executive or inside director usually devotes substantially full time and attention to the affairs of the corporation, while non-executive or outside director has no executive responsibilities with respect to the corporation's day-to-day operations. Non-executive directors can be categorized into directors who have some kind of independence-impairing relationship with the company (e.g. former executives

and representatives of the firms' major affiliates, suppliers or customers) and directors who are free from any business or other relationship that could materially interfere with the exercise of their independent judgment. The first group of directors is normally referred to as "Affiliated Outsiders", "Nominee" or "Gray" directors in some type of contexts, whilst the latter group is referred to as either "Non-Affiliated Outsiders" or "Independent Non-executives" as in the Cadbury Report (Cadbury, 1992; Ezzamel & Watson, 2005; Felo, 2001; Ramsay & Stapledon, 2000).

Kesner and Johnson (1990) research asserted on inside or executive directors' contributions to the corporation. They indicated that insiders offer the board a direct working knowledge of the organization. Insiders bring their specialised knowledge and experience to the board because of their direct involvement in day-to-day organisational activities. They often raise issues that the chief executive officer (*CEO*) might be unaware of them, as in complex organisations it is difficult for the *CEO* to know all critical aspects in each strategic business unit, or functional area or issues that might be neglected by the *CEO* such as negative information about firm performance. Another benefit of executive directors is that they serve as a direct communications channel that conveys the concerns and priorities of the board to remaining organizational members. In addition, insiders are placed on the board to prepare them for future leadership positions within the organization through experience gained from having opportunities to view actions in a larger corporate perspective rather than in the narrow operating perspective of their managerial positions.

Regarding outside directors, proponents of the agency theory argue that having independent outside directors enhances the board monitoring power over top management because of their independent and complimentary knowledge characteristics (Alzoubi & Selamat, 2012; Fama, 1980; Weisbach, 1988). Outside

directors have broad experience and knowledge which span various companies and industries. Their broad knowledge complements insiders' specialised knowledge of the organisation, which provides an important support function to the top managers in dealing with specialized decision problems (Fama & Jensen, 1983; Kesner & Johnson, 1990). This could further improve management performance and thus enhance the boards' roles of ratifying and monitoring management decisions, resulting in an increase in the wealth of the shareholders (Abdullah, 2004).

Another reason claimed by proponents of agency theory that outside directors increase the monitoring function of the board is that being directors of a well-performing company signals the directors' decision expertise to the external labour market, which rewards them with more directorships on boards of other firms and vice versa. Therefore, the disciplinary effect of the labour market gives outside directors the incentive to develop and protect their reputations as effective decision experts.

3.3.1.2 The UK context

The Corporate Governance code and various reports in the UK have emphasised the independence of the board of directors (Mallin, 2019). The Cadbury Report, for instance, recommended that the board of directors should comprise a minimum of three non-executive directors capable of influencing the board's decisions. The report recommended also that the majority of those non-executives be independent of management. It stipulated in paragraphs 4.11 and 4.12 that at least two of the minimum requirement of three non-executives should be independent and free from any relationship, with the exception of their shareholdings and fees, that could substantially impact their independence (Cadbury, 1992).

In 2003, the Higgs Review re-emphasised the independence of the board of directors in its published report. It recommended that at least half of a firm's board members, excluding the chairman, be independent non-executive directors (Higgs, 2003). That recommendation has been included in the UK Corporate Governance Code and remain unchanged (FRC, 2018b). Provision 11 of the latest version of the UK Corporate Governance Code states that:

> "*At least half the board, excluding the chair, should be non-executive directors whom the board considers to be independent.*"
>
> (FRC, 2018b, p. 7)

3.3.1.3 Previous related empirical studies

Empirical results on the association between board independence and earnings management in developed countries literature are conflicting (García-Meca & Sánchez-Ballesta, 2009). Beasley (1996) tested the agency theory prediction in the United States, which suggests that having a higher percentage of outside directors increases the board's effectiveness in monitoring top management. He found a significant negative relationship between the percentage of outside members on the board and the likelihood of fraud and suggested that the inclusion of outside directors on the board increases its effectiveness in monitoring management and thus preventing financial statement fraud. Dechow, Sloan, and Sweeney (1996) reported similar findings for a sample of 92 firms subject to the Securities and Exchange Commission (*SEC*) accounting enforcement actions for alleged *GAAP* violations. Their study provided evidence that firms are less likely to manipulate earnings when they have boards dominated by outside directors.

Using a balanced sample of 1260 firm-year observations of UK firms, Peasnell et al. (2000a) examined the effect of the Cadbury Report (1992) release on the association between earnings management and board composition. While they found

no evidence of association between the degree of accrual management and the board composition in the pre-Cadbury period, they reported a significant negative relation between income-increasing accrual management and the proportion of outside directors on the board during the post-Cadbury period. Their result suggested that board's effectiveness at monitoring management is a positive function of the proportion of outside board members and that appropriately structured boards discharge their financial reporting duties more effectively as indicated by the reduction of earnings management after the release of the Cadbury Report (1992).

Chtourou, Bédard, and Courteau (2001) did not find any association between earnings management and percentage of independent non-executive directors on the board for a sample of 300 observations of firms listed in the United States in 1996. This result contradicts that documented by Klein (2002) in the United States too. Klein (2002) investigated the impact of independent boards of directors on earnings management using data from 1991 to 1993 for a sample of 692 observations of listed US firms. She used abnormal adjusted residual from the Modified cross-sectional Jones model to measure the dependent variable, abnormal accruals, which is used as a proxy for earnings management. She found a negative relationship between board independence and abnormal accruals. Her study indicated that reductions in board independence are accompanied by large increases in abnormal accruals and that the most pronounced effects occur when the board is comprised of a minority of outside directors.

Another US study, conducted by Xie et al. (2003), investigated the role of board of directors in preventing earnings management for a sample of 282 firm-year observations for the years 1992, 1994 and 1996. The authors used discretionary current accruals as a proxy of earnings management and only two control variables for firm

size, using the log of the market value of equity, and year, using two dummy variables taking the value of one if the analysis year is 1992 or 1994. They found that the percentage of independent outside directors is negatively related to the discretionary current accruals suggesting that large proportion of outside directors is associated with better monitoring.

Looking further at these studies conducted in US context by Chtourou et al. (2001), Klein (2002), and Xie et al. (2003), the first study findings contradict with those of the other two studies. One reason that may explain this contradiction is that Chtourou et al. (2001) selected a sample comprising 100 firms with the largest positive accruals, 100 firms with the largest negative accruals, and the 50 firms with the smallest positive and the 50 with the smallest negative accruals out of an initial sample of 3,451firms. The selected sample contains only firms with extreme values of accruals, whether highest or lowest positive or negative accruals, which may not represent firms with moderate discretionary accruals. However , Klein (2002) sample, for instance, covers all firms with moderate and extreme values of accruals. She used a sample of 692 firm-year observations selected from an initial sample containing all firm-years listed on the S&P 500 after excluding non-US firms, financial sector firms, outliers, and firms with missing data.

Using a sample of 202 Canadian companies during the years 1997-1997, Park and Shin (2004) examined the relationship between the proportion of outside directors on the board and the level of accrual management. They used the cross-sectional version of the Jones model to measure discretionary current accruals, a proxy for earnings management, and found that outside directors, as a whole, do not reduce earnings management in Canada, but officers of financial intermediaries and the representatives of the active institutional shareholders on the board do.

Niu (2006) examined the association between corporate governance mechanisms (including board composition, management shareholding, shareholders' rights and the extent of disclosure of governance practices) and the quality of accounting earnings, which is measured in two ways: the accounting-based measure of earnings management and the market-based measure of earnings informativeness. Using firm-level corporate governance data for a sample of Canadian firms in the years 2001-2004, empirical tests showed that the magnitude of abnormal accruals is inversely associated with the level of independence of board composition.

The two Canadian studies (Niu, 2006; Park & Shin, 2004) documented contradicting results about the association between board independence and earnings management. The first study results are more reliable as the author examined the years 2001-2004 when significant governance initiatives were imposed in Canada, after the issuance of SOX in respond to corporate failures in the US, which included major corporate governance reforms intended to enhance the role of independent directors in Canadian firms. Another reason justifying that the results of first study are more reliable is that Niu (2006) adopted a more sophisticated measure of earnings management which controls for firm performance by using the performance-matched discretionary accruals model (Kothari et al., 2005). Park and Shin (2004) employed Modified-Jones Model (Dechow, Sloan, & Sweeney, 1995) which has a misspecification problem as it does not control for the effect of a firm's performance on abnormal accruals (Kothari et al., 2005).

A further UK study, conducted by Peasnell et al. (2005), examined whether board monitoring influences the incidence of earnings management. They conducted the empirical tests using a sample consisting of 1,271 firm-years observations with fiscal year ends between June 30, 1993 and May 31, 1996. The results of the study

showed that firms with a higher proportion of outside directors have less income-increasing accruals when earnings fall below the threshold. However, when earnings exceed the threshold, there is strong evidence of income-decreasing accruals with no evidence that outside directors constrain such manipulations.

Benkel, Mather, and Ramsay (2006) investigated whether independent directors on the board and audit committee are associated with reduced levels of earnings management in Australia. They used the DeAngelo (1986) model to measure their earnings management proxy for a sample of 222 top Australian firms for the fiscal years 2001, 2002 and 2003. Their results showed that boards and audit committees with higher proportion of independent directors are associated with reduced levels of earnings management. Hutchinson, Percy, and Erkurtoglu (2008) replicated Benkel et al. (2006) research in Australia too but for the years 2000 and 2005 with the purpose of investigating the effect of the release of two significant corporate governance reforms between these two years on earnings management. Their results did not differ from Benkel et al. (2006) results that board independence is associated with lower levels of earnings management.

Garcia Osma and Noguer (2007) examined whether corporate governance mechanisms promoted by best practice codes are effective in mitigating earnings manipulation for a Spanish sample of quoted companies during the period 1999-2001. Specifically, they analysed the association between earnings management and two key aspects of corporate governance: board composition and the existence of board monitoring committees. Using discretionary accruals, the authors found a positive and significant relationship between earnings manipulation measures and the proportion of independent directors, with the exception when the firm has a nomination committee composed of a majority of institutional directors. This result indicates that in Spain

management may interfere in designation of independent directors who lack real independence with exception when the firm has a nomination committee composed of a majority of institutional directors that may play a major role in inhibiting management from such interference.

Jaggi, Leung, and Gul (2009) evaluated the association between board independence and earnings management in Hong Kong firms. Additionally, they examined whether family control moderates the monitoring effectiveness of independent boards. They used a sample of 770 firm-year observations for Hong Kong firms for the three-year period from 1998 to 2000. Their results showed that a higher proportion of independent non-executive directors is associated with more effective monitoring to constrain earnings management. However, they indicated that family control in Hong Kong firms moderates the negative association between independent directors on boards and earnings management, suggesting that higher independent corporate boards in family-controlled firms are less effective in constraining earnings management than in non-family-controlled firms.

In the Greek capital market, Dimitropoulos and Asteriou (2010) examined the association between the size and composition of the board of directors and levels of earnings management for a sample of 97 non-financial firms listed on the Athens Stock Exchange for the years 2000 through 2004. Their results did not differ from those documented in most of developed countries research as they found a negative relation between the level of board independence and the use of absolute discretionary accruals as a proxy for earnings management.

Siregar and Bachtiar (2005) examined whether corporate governance mechanisms are related to both earnings management and information asymmetry for a sample of 144 Indonesian firms. They showed that the board of directors is not

effective in mitigating earnings management, as they did not find a significant association between earnings management and the proportion of independent directors on the board. The authors justified the difference between their results and that of most of the literature and claimed that their result of board ineffectiveness might be due to the shortage of study period of only two years, which is not sufficient to evaluate to role of board of directors in controlling earnings management. To test whether that reason might cause the difference in results, Siregar and Utama (2008) repeated the study with the same number of Indonesian listed firms (144 firms) but for the years from 1995 to 2002 after excluding the years of 1997 and 1998 to avoid the effect of the Asian financial crisis. They reached the same results showed by Siregar and Bachtiar (2005) that there is no significant association between earnings management and the proportion of independent directors on the board, indicating that the study period was not the main reason causing the difference in the results reached by studies in the Indonesian context and those studies in the developed countries context.

Additionally, using the absolute value of discretionary accruals as a proxy for earnings management, Abdul Rahman and Ali (2006) investigated the effectiveness of monitoring functions of board of directors, audit committee and concentrated ownership in constraining earnings management among 97 firms listed on the Main Board of Bursa Malaysia over the period 2002-2003. They used the cross-sectional version of the modified Jones model and their results indicated that there is no significant relationship between independent directors and earnings management. The authors justified the ineffectiveness of outside directors in discharging their monitoring function and stated that outside directors' ineffectiveness may be due to their lack of expertise, required skills and knowledge in the business environment. Hashim and Devi (2008) extended Abdul Rahman and Ali (2006) research by

investigating likelihood of managers involvement in income-increasing or income-decreasing earnings management instead of using the absolute value of discretionary accruals. They used a sample of top 200 non-financial companies listed on Bursa Malaysia's Main Board and Second Board for the year 2004. With the exception of a positive significant result for the board independence when firms undershoot target earnings, Hashim and Devi (2008) results were consistent with findings by Abdul Rahman and Ali (2006) that board independence was not significant in explaining the level of accrual manipulations in Malaysia. They suggested that the existence of independent non-executive directors had no effect on the incidence of earnings management in Malaysia. Hashim and Devi (2008) Adopted the same argument stated by Abdul Rahman and Ali (2006) as an explanation for outside directors' ineffective in monitoring management. They indicated that outside directors' ineffectiveness might be due to their lack of expertise, required skills, knowledge, and financial sophistication in the business environment as they gain knowledge of the financial reporting process only as a by-product of their board services.

Chen et al. (2007) investigated whether the proportion of independent directors on the board and their financial expertise are associated with lower levels of earnings management. They found a negative relation between the role of independent directors and earnings management using absolute discretionary accruals for a sample of 2,024 Taiwanese listed firms.

Another study in a developing country was conducted by Mashayekhi (2008) to examine the relationship between board characteristics and earnings management using a sample of 150 firms listed on the Tehran Stock Exchange (TSE) for the years 2003, 2004 and 2005. She used the cross-section version of the modified jones model in estimating the discretionary accruals (earnings management proxy) and suggested

that increasing the number of outside directors on the board in Iran may enhance the board effectiveness in monitoring the firm's management of earnings. Roodposhti and Chashmi (2011) and Nahandi, Baghbani, and Bolouri (2011) conducted the same study in Iran too using two different samples of firms listed on Tehran Stock Exchange: 196 firms for the years between 2004 and 2008 and 480 firm-years observation for the years between 2001 and 2008 respectively. Both of the research studies used the cross-sectional version of the modified Jones model but reached different results. Roodposhti and Chashmi (2011) results corroborated with those of Mashayekhi (2008) as they documented a negative relation between board independence and earnings management while Nahandi et al. (2011) found no association between the levels of earnings management and the proportion of independent directors. One reason that might cause the difference in results in Iranian context is that Nahandi et al. (2011) research covered periods before firms adopting the corporate governance principles, as in Iran corporate governance issue started to be taken seriously in 2003 and first Iranian corporate governance code was issued in 2004 (Mashayekhi, 2008). Nahandi et al. (2011) covered periods when independent directors might not be the majority of the board, as required by the Iranian Corporate Governance Code, the nomination process of independent directors might be affected by management, and finally independent directors might not be aware of their responsibilities towards effective monitoring of management.

In china, Chen and Zhang (2014) investigated the impact of the 2002 Chinese Code of Corporate Governance for Listed Companies on earnings management. Drawing upon a sample of 447 non-financial listed companies over the period of 2000–2006, they found a negative relationship between board independence and earnings

management and argued that firms with a large proportion of outside directors are more likely to provide reliable financial information to the market in China.

In Africa, Hassan and Ahmed (2012) and Uwuigbe, Peter, and Oyeniyi (2014) investigated the impact of corporate governance mechanism on earnings management in Nigeria. The first research used a sample of 25 non-financial firms listed on the Nigerian Stock Exchange (*NSE*) for the period between 2008 and 2010 and a cross-sectional version of the modified Jones Model to measure discretionary accruals, while the later research used a sample of 40-listed firms for the period 2007-2011 and the same model for measuring discretionary accruals. Both research studies documented a significant negative relationship between board independence and earnings management and concluded that boards dominated by independent outside directors constrain managers from using their discretion to alter reported earnings.

Another African study was conducted by Chekili (2012) to examine the relationship between some governance mechanisms and earnings management in Tunisia. The author employed Kothari et al. (2005) model o measure discretionary accruals, which is used as a proxy for earnings management, for a sample of 20 Tunisian firms during the 2000 - 2009 period. The results of Chekili (2012) agreed with those of other research conducted in Africa (Hassan & Ahmed, 2012; Uwuigbe et al., 2014) as they showed that earnings management is negatively linked to the presence of external directors on the board.

An additional African study was conducted by Waweru and Riro (2013) to investigate the impact of corporate governance and firm specific characteristics on the levels of earnings management. They used a sample of 37 firms listed on the Nairobi Stock Exchange (*NSE*) and found that earnings management is negatively related to the proportion of independent directors on the board suggesting that firms with a

higher proportion of independent directors are less likely to engage in earnings management.

A more recent African study was conducted by Agyekum, Aboagye–Otchere, and Bedi (2014) to examine the relation between corporate governance mechanism and earnings management levels for a sample of 14 listed companies on Ghana Stock Exchange for the years 2002 to 2006. The authors found that independent directors on the board lowers management tendency to engage in earnings management.

Reviewing literature indicates that a large body of research investigated the impact of corporate governance on accrual-based earnings management [e.g. Agyekum et al. (2014); Chtourou et al. (2001); Klein (2002); Peasnell et al. (2005); Xie et al. (2003)], but only few studies examined the effectiveness of corporate governance in limiting real earnings management practices and provided mixed evidence. Using pre-SOX data, Visvanathan (2008) examined whether certain characteristics of governance constrain real earnings management. Particularly, he used a sample of 9,567 firm-year observations over the period 1996 to 2002 to examine the impact of certain corporate governance characteristic on three types of real earnings management (namely abnormal cash flow from operations, abnormal discretionary expenses and abnormal production costs). Visvanathan (2008) found that board independence is inversely related to the occurrence of real earnings management activities conducted through the reduction of discretionary expenses and overproduction of inventory, but not thorough sales manipulations, suggesting that that board independence plays a constraining role on real earnings management activities.

In the United Kingdom, Garcia Osma (2008) analysed the monitoring role of independent directors in constraining one set of real earnings management decisions: research and development (*R&D*) spending. She used a sample of 3,438 firm-year

observations spanning 29 different industries for the years 1989 to 2002 and indicated that independent boards efficiently constrain the manipulation of *R&D* spending in UK.

The results indicated by Kang and Kim (2012) agree with those documented by Garcia Osma (2008) and Visvanathan (2008). They used a sample of 1,104 firm-year observations of firms listed on the Korean Stock Exchange (*KSE*) from 2005 to 2007 and suggested that managers are less likely to be engaged in real activity-based earnings management (particularly aggressive sales or overproduction) when the board of directors consists of more independent directors.

In developing countries, Zgarni, Halioui, and Zehri (2014) reported similar results to that of Visvanathan (2008) for a sample 29 non-financial Tunisian companies that were traded on the Tunis Stock Exchange during the period 2001-2009. They showed that board independence is inversely related to the occurrence of real earnings management activities through the reduction of discretionary expenses and overproduction of inventory, but not through sales manipulation. Also Hassan and Ibrahim (2014) found that independent directors are ineffective in constraining sale manipulation for a sample of 20 firms listed in Nigeria in the years between 2007 and 2012.

3.3.1.4 Board independence hypothesis

Based on the agency theory prediction that having independent directors enhances the board monitoring, the following hypothesis is developed for the two earnings management techniques:

H1: There is a negative relationship between the proportion of independent directors and earnings management.

3.3.2 *CEO* Duality

3.3.2.1 Conceptual and theoretical background

CEO duality occurs when one person holds two positions the *CEO* and the chairperson of the board of directors in a corporation at the same time (Rechner & Dalton, 1991). Governance literature encompasses two opposing theoretical views concerning which structure is appropriate for leading the organisation: the structure that combines the roles of the *CEO* and the board chairperson (*CEO* dual structure) or the one that separates them (Kang & Zardkoohi, 2005). One of those theoretical views is discussed below, which is the agency theory, as it is concerned with the board oversight function.

The agency theory argues for the separation of the roles of the *CEO* and the chairman of the board of directors (Jensen, 1993). Agency theorists contend that *CEO* duality may impede the board capability of performing one of its most important functions: monitoring, disciplining, and compensating senior executives (Fosberg, 1999). Blenyth Jenkins – the director of corporate affairs for the Institute of Directors – pointed out in an interview for the New York Times that *CEO* duality creates a situation where the *CEO* is “marking his own exam papers” (Stevenson, 1992). According to the agency theory, duality concentrates power in the *CEO*’s hands, and further entrench his/her position in the firm, potentially allowing for more management discretion to manipulate earnings (Abed, Al-Attar, & Suwaidan, 2012; Epps & Ismail, 2009), and increasing agency costs that will negatively affect future firm performance (Kang & Zardkoohi, 2005).

3.3.2.2 The UK context

The role of the chairperson has changed considerably in the UK since the release of the Cadbury Report in 1992 (Cotton & Gifford, 2015). The Cadbury Report put

forward a number of recommendations; some of them are related to the responsibilities of the chairperson. Concerning *CEO* duality, it recommended that the roles of chair and *CEO* should not be exercised by the same person (Cadbury, 1992). That recommendation is consistent with the agency theory arguments. The main aim of this recommendation is to ensure a balance of authority and power, such that no one director has unbounded powers of decision (Cadbury, 1992). It remains as a provision encompassed in the most recent version of the UK Corporate Governance Code to which listed companies on *LSE* should comply (FRC, 2018b). If, exceptionally, the chairman is also the *CEO*, major shareholders should be consulted prior to the appointment and the board should demonstrate its reasons to all shareholders at the time of the appointment and also disclose these reasons on the company website (FRC, 2018b).

3.3.2.3 Previous related empirical studies

Prior studies in developed countries reported mixed results regarding the association between *CEO* duality and accrual earnings management. Xie et al. (2003) found that *CEO* duality is not related to discretionary accruals in the United States in the pre-SOX period. Also, Ghosh, Marra, and Moon (2010) documented an insignificant association between *CEO* duality and earnings management, measured using absolute performance-adjusted discretionary accruals, in periods covering both pre- and post-SOX (1998-2005) in the United States. However, Epps and Ismail (2009) showed that *CEO* duality is positively associated with income-increasing earnings management in 2004 after the SOX was issued. In the UK, Peasnell et al. (2005) used duality as a control variable in their model to test the impact of corporate governance practices on

accrual earnings management and they found an insignificant association between duality and accrual-based earnings management.

In developing countries, Abdul Rahman and Ali (2006) found that *CEO* duality is not significantly related to discretionary accruals in Malaysian context. Using a sample of 114 listed Philippine companies in 2006, Banderlipe II (2009) also found that duality is insignificantly related to accrual-based earnings management. However, in the Iranian context, Nahandi et al. (2011) and Roodposhti and Chashmi (2011) found that the likelihood of earnings management will increase if the *CEO* is the board chair.

Concerning the impact of *CEO* duality on real earnings management activities, Visvanathan (2008) used pre-SOX data (1996 to 2002) and found no association between CEO duality and the three types of *REM* examined (abnormal cash flow from operations, abnormal discretionary expenses, and abnormal production costs). However, Garven (2015) used post-SOX data (2005-2007) but she also found no association between *CEO* duality and real earnings management activities.

3.3.2.4 CEO duality hypothesis

As duality may impede the board capability of performing its monitoring function according, to the agency theory proponents, the following hypothesis is developed:

H2: There is a positive relationship between CEO duality and earnings management.

3.3.3 Activity of the board

3.3.3.1 Conceptual background

Vafeas (1999) suggested that active boards are more likely to perform their duties in accordance with shareholders' interests. Phan (2007) argued that boards that meet frequently are considered effective boards and Lipton and Lorsch (1992) believed that the frequency of board meetings is essential to allow directors appropriately perform their monitoring function. Xie et al. (2003) argued that such frequency of meetings enable directors to devote more time to many issues specifically earnings management and contended that boards that meet rarely may not concentrate on these issues and may only rubber-stamp management plans.

An opposing view was offered in the literature about the usefulness of increasing the number of board meetings. In addition to the costs that are associated with board meetings, such as managerial time, travel expenses, and directors' meeting fees, the limited time that outside directors spend together is not used for the meaningful exchange of ideas among themselves or with management. Instead, much of that time is consumed in doing routine tasks, limiting opportunities for outside directors to exercise their oversight function over management (Vafeas, 1999). Moreover, Jensen (1993) advocated for inactive boards as a way to avoid or lessen conflicts that often arise among members of active boards as long as the internal control system of the firm is working properly.

3.3.3.2 Previous related empirical studies

Empirically, there are few studies that addressed the impact of board activity on earnings management. For instance, Xie et al. (2003) documented a negative association in the US between the levels of accrual earnings management and the

meeting frequency of boards, indicating that board activity influences members' ability to serve as effective monitors. González and García-Meca (2014) reported similar results in Latin America and showed that a higher number of board meetings can provide an indication of greater board involvement in monitoring activities and its willing to enhance the quality of financial information.

In developing countries, Mashayekhi (2008) and Mansor, Che-Ahmad, Ahmad-Zaluki, and Osman (2013) showed results, in Iran and Malaysia contexts respectively, contrary to those reported by Xie et al. (2003) in the US. They found that the number of board meetings has a significant positive association with accrual earnings management. One reason justifying their results is that the frequency of meetings may not always provide an indicator for the effectiveness of the board of directors. Sometimes, as the number of meetings increase, members of the board become more socially connected and resulting in an increasing courtesy among them. Executives can benefit from such situation through engaging in managing the company's earnings as they believe that their unhealthy activity would go undetected (Mansor et al., 2013).

Concerning the impact of the frequency of board meetings on real earnings management activities, literature showed also mixed results. While Garven (2015) documented no relationship between the number of board meetings and the three types of real earnings management activities (abnormal cash flow from operations, discretionary expenses and production costs) in the US, Zgarni et al. (2014) found a negative association between the number of board meetings and overproduction and sales manipulation in Tunisia. However in Korea, Kang and Kim (2012) showed that earnings management through sales manipulation increases as the board's activity increases. The authors did not justify their results and left that issue for future research.

3.3.3.3 Board activity hypothesis

Based on the empirical findings, discussed in the previous section, that suggest that more board meetings improves its monitoring function, the following hypothesis is constructed:

H3: There is a negative relationship between board activity and earnings management.

3.3.4 Board Size

3.3.4.1 Conceptual and theoretical background

Prior research indicates that board size plays a significant role in enhancing directors' ability to support and monitor management (Anderson, Mansi, & Reeb, 2004; Davidson III, Sakr, & Wang, 2010). This role was addressed according to different views under several governance theories including the agency theory.

Agency theory supporters argued that small boards help enhance their performance (Jensen, 1993). According to them, larger boards are less likely to function effectively as they inhibit the board's ability to take strategic decisions based on the assumption that larger groups are more difficult to coordinate effectively and reach consensus on decisions due to the large number of potential interactions among group members (Goodstein, Gautam, & Boeker, 1994). Lipton and Lorsch (1992) suggested that the optimal board size should not exceed eight or nine members. Jensen (1993) argued that when the board comprises more than seven or eight members, it becomes less effective in performing its monitoring function and easily controlled by *CEO*, who may use its managerial discretion to maximize his wealth through manipulating corporate earnings (Abdul Rahman & Ali, 2006).

3.3.4.2 Previous related empirical studies

In the United States, Beasley (1996) found that the likelihood of financial statement fraud increases as the board increases in size. However, Chtourou et al. (2001) and Xie et al. (2003) indicated that larger boards are associated with a lower level of earnings management. They justified their result by arguing that larger boards may have a greater number of financially experienced directors who play an important role in curbing earnings management. Kouki, Elkhaldi, Atri, and Souid (2011) also investigated the impact of board size on earnings management but they used a sample of 171 American firms covering periods before and after the *SOX* issuance (from 1998 to 2005), not only periods before *SOX* issuance as in Chtourou et al. (2001) and Xie et al. (2003). They found that larger boards favour earnings management as these boards induce opinion diversity and slowness of decision making, which benefits managers at the end.

In one of the developing countries, Saleh, Iskandar, and Rahmat (2005) used a sample of 561 Malaysian companies to assess the effectiveness of board characteristics in mitigating earnings management in 2001. They adopted the cross-sectional version of the Jones (1991) model to measure earnings management and found insignificant relation between board size and earnings management. Abdul Rahman and Ali (2006) and Mansor et al. (2013), on the other hand, found a significant positive relationship between board size and earnings management in 2002 – 2003 and 2008 respectively, suggesting that the larger the board, the more ineffective it will be in performing its monitoring function. Two reasons are proposed for justifying the contradicting results. First, Saleh et al. (2005) study used data published in 2001 soon after the issuance of the Malaysian Code of Corporate Governance. Accordingly, these data may include

many firms that did not adopt the new code making study results being affected by such non-adoption. Second, Saleh et al. (2005) employed the cross-sectional version of the original Jones (1991) model while Abdul Rahman and Ali (2006) and Mansor et al. (2013) adopted the cross-sectional version of the modified Jones Model (Dechow et al., 1995) to measure earnings management. Dechow et al. (1995) provided evidence that the later model is more powerful in detecting earnings management than the Jones (1991) model.

Through investigating the association between corporate governance mechanisms and real earnings management activates, Visvanathan (2008) and Garven (2015) failed to find a significant relationship between board size and real earnings manipulations through reduction of discretionary expenses, overproduction of inventory, and sales manipulations. This result is in disagreement with that of Kang and Kim (2012), who found that board size impacts real earnings management negatively in Korea. Zgarni et al. (2014) documented a contradicting result in Tunisia by showing that board size is positively related to real earnings manipulations.

One reason suggested for justifying the contradiction in the results reported in literature can be obtained through investigating Pearson correlations documented in the two studies of Kang and Kim (2012) and Zgarni et al. (2014). The first study showed that proportion of independent directors is positively correlated to the size of the board, suggesting that the increase in the size of the board entails an increase in the number of independent directors. The increase in the number of independent directors enhances the monitoring function of the board and limits the earnings management activities as suggested by the negative relation between the independence of the board and earnings management reported by Kang and Kim (2012). However, Zgarni et al. (2014) did not find a significant correlation between the proportion of independent

directors and board size, which means that the increase in board size is mainly caused by the increase in the number of executive directors and thus facilitates management dominance over the board and provides them with more opportunities to manage earnings.

3.3.4.3 Board size hypothesis

Based on the agency theory prediction that larger boards are less effective in performing their monitoring function, the following hypothesis is developed:

H4: There is a positive relationship between board size and earnings management.

3.4 Data and Methodology

The current study is conducted using data obtained from the annual reports of UK–listed companies in the years between 2010 and 2014. It uses a panel data that covers periods following the revision of the UK Corporate Governance Code in June 2010 (FRC, 2010c). The initial sample includes all companies that constitute Financial Times Stock Exchange (*FTSE*) 350 Index. Small companies, which are below *FTSE* 350, are not covered in the present study as some of the UK Corporate Governance Code provisions do not apply to them (FRC, 2014c).

Financial firms (ICB 8000:8999) are excluded from the initial sample due to their special accounting practices and accordingly different accruals processes that makes their detection through earnings management models such as the Modified–Jones Model more difficult (Chtourou et al., 2001; Klein, 2002; Peasnell et al., 2005). All regulated utilities (ICB 7000:7999) and mining (ICB 1750:1779) companies are also excluded because of differences in their incentives and opportunities to manage

earnings (Peasnell et al., 2005). Regulated companies have the incentive to adopt conservative accounting practices and to defer income recognition as their revenues are set on fixed accounting rates of return (Habbash, 2013; Liu, 2012). Moreover, mining companies are excluded as they are subject to statutory requirements of specific accounting treatments for particular transactions and events relating to extractive industry operations (Cotter, Stokes, & Wyatt, 1998). Following prior research, industries' supersectors with less than six observations per year are then excluded to ensure sufficient data for parameter estimation (Athanasakou, Strong, & Walker, 2011; DeFond & Jiambalvo, 1994; Rosner, 2003; Subramanyam, 1996). Table 3-1 summarizes these procedures for selecting the study's sample. To examine the selected sample, the financial data needed to calculate earnings management and control variables are obtained from the DataStream, FAME and Thomson One Banker. Data on corporate governance variables are hand collected from the annual reports of the sample firms. The following regression models are employed to examine the hypotheses for the selected sample:

$$\begin{aligned} DA_{it} = \alpha + \beta_1 BRDIND_{it} + \beta_2 BRDSIZE_{it} + \beta_3 BRDACT_{it} \\ + \beta_4 DUAL_{it} + \beta_5 ROA_{it} + \beta_6 GROWTH_{it} + \beta_7 LEV_{it} \\ + \beta_8 AUDITQ_{it} + \beta_9 MNGTOWN_{it} + \beta_{10} BLOCK_{it} \\ + \beta_{11} REM_{it} + \varepsilon \end{aligned} \quad (3.1)$$

$$\begin{aligned} REM_{it} = \alpha + \beta_1 BRDIND_{it} + \beta_2 BRDSIZE_{it} + \beta_3 BRDACT_{it} \\ + \beta_4 DUAL_{it} + \beta_5 ROA_{it} + \beta_6 GROWTH_{it} + \beta_7 LEV_{it} \\ + \beta_8 AUDITQ_{it} + \beta_9 MNGTOWN_{it} + \beta_{10} BLOCK_{it} \\ + \beta_{11} DA_{it} + \varepsilon \end{aligned} \quad (3.2)$$

Table 3-1*: *Sample Selection Procedures

Description	First model: *AEM*						Second model: *REM*					
	2010	**2011**	**2012**	**2013**	**2014**	**Pooled**	**2010**	**2011**	**2012**	**2013**	**2014**	**Pooled**
Initial sample (FTSE 350)	350	350	350	350	350	1750	350	350	350	350	350	1750
Excluded:												
Financial, mining and Utilities firms	140	140	140	140	140	700	140	140	140	140	140	700
Industries smaller than 6 firms	12	12	12	12	12	60	12	12	12	12	12	60
Missing data	34	30	29	30	30	153	34	30	29	30	30	153
Final sample	164	168	169	168	168	**837**	164	168	169	168	168	**837**

3.5 Variables Measurement

3.5.1 Dependent variables measurement

The current study examines the impact of corporate governance mechanisms on earnings management. Two types of earnings management are examined: accrual-based and real activities earnings management.

3.5.1.1 Accrual-based earnings management (*AEM*) variable

Accrual-based earnings management is the first dependent variable in the empirical tests of the current study. Accounting earnings are decomposed into cash flows from operating activities (*CFO*) and accruals. Healy (1985) pointed out that managers can use accruals to manipulate earnings numbers. Managers use accruals to modify the timing of reported earnings as accruals enables them to transfer earnings between periods. Based on managerial control, accruals usually are separated into two parts: discretionary and nondiscretionary accruals (Teoh et al., 1998b). Non-discretionary (normal) accruals are accounting adjustments to the firm's cash flows enacted by accounting standard-setting bodies and are beyond the control of management (Healy, 1985). Discretionary (abnormal) accruals, on the other hand, are adjustments to the firm's cash flows selected by the managers from an opportunity set of generally accepted procedures defined by accounting standard-setting bodies. Therefore, discretionary accruals are the component of accruals that often gives managers opportunities to manipulate earnings and is typically used as a measure of earnings management (Healy, 1985; Jones, 1991).

Several prediction models have been proposed in the literature for separating accruals into discretionary and non-discretionary components such the models developed by DeAngelo (1986), Dechow and Dichev (2002), Dechow, Hutton, Kim, and Sloan (2012), Dechow et al. (1995), Healy (1985), Jones (1991), Kothari et al.

(2005). Peasnell et al. (2005) suggested that the most frequently used methods at that time are the Jones (1991) and the modified-Jones (Dechow et al., 1995) models. Later, Kothari et al. (2005) indicated that these models might be misspecified when applied to samples of firms with extreme financial performance because performance and estimated discretionary accruals exhibit a mechanical relation. They extended Jones (1991) and Modified-Jones (Dechow et al., 1995) models by including current or past year's firm return on assets (*ROA*) as an additional regressor to control for the influence of prior firm performance on the estimated discretionary accruals. The Performance-adjusted model developed by Kothari et al. (2005) has now become the standard procedure being adopted by researchers for detecting earnings management (Keung & Shih, 2014). Recently, Dechow et al. (2012) proposed a new approach for detecting earnings management that takes into account the inherent feature of the accrual process that any accrual-based earnings management in one period must reverse in another period. They incorporate these reversals in their method when testing for earnings management and show that the power and specification of their method has significantly improved.

This study does not adopt the recently developed approach by Dechow et al. (2012) as this approach requires the researcher to have reasonable priors concerning the periods in which accrual earnings management occurs and reverses, however it does not provide guidance on how these priors can be identified. Gerakos (2012) contended that this approach is useful for detecting earnings management for firms with known manipulation such as firms subject to *SEC* Accounting and Auditing Enforcement Releases (*AAERs*).

This research employs one of the most frequently used models, which is the performance-adjusted (Kothari et al., 2005) model. Dechow et al. (2012) indicated that

the performance-adjusted (Kothari et al., 2005) model mitigates misspecification when used for detecting earnings management for samples of extreme performance while can exaggerate misspecification in samples with extreme size and cash flows from operating activities (*CFO*). Moreover, Keung and Shih (2014) recommended for studies using discretionary accruals as a dependent variable in a regression analysis (like the current study), to use performance-adjusted (Kothari et al., 2005) model if the sample firms' distribution of operating performance is skewed. They indicated that employing models that do not control for performance in these studies will make the expected values of estimated coefficients on all the independent variables equal the true coefficients in case that the sample firms' distribution of operating performance is unskewed. Nonetheless, many studies in the literature adopted the performance-adjusted (Kothari et al., 2005) model without even first examining whether the sample is skewed (Keung & Shih, 2014). The current study avoids this limitation as it tested for the skewness of the sample firms' performance and based on the test results, the proper model was selected. Results[1] show that *ROA* is highly skewed and accordingly the performance-adjusted (Kothari et al., 2005) model is employed to measure the discretionary accruals.

The cross-sectional version of the performance-adjusted (Kothari et al., 2005) model is adopted in the current research rather than the time-series version. The cross-sectional versions are preferred over their time-series counterparts for a number of reasons. First, using cross-sectional versions, rather than their time-series counterparts, helps generate a larger sample with higher number of observations per model (Peasnell et al., 2000a; Subramanyam, 1996). Second, using cross-sectional accruals models helps avoid the survivorship bias arising from requiring long time-series data that may

[1] Results are reported in *Table 3-3*.

extend for 10 years (Peasnell et al., 2000a; Peasnell, Pope, & Young, 2000b). Third, time-series versions may have a misspecification problem in the form of serially-correlated residuals that occurs due to the self-reversing feature of accruals (Peasnell et al., 2000b). Fourth, time-series versions are based on the assumption that the coefficient estimates of the model variables remain stationary over time; and due to the inappropriateness of this assumption, it is possible that these versions are misspecified (Peasnell et al., 2000b; Subramanyam, 1996). Finally, Bartov, Gul, and Tsui (2000) provided an empirical evidence that cross-sectional versions perform better than their time-series counterparts in detecting earnings management.

Before using performance-adjusted (Kothari et al., 2005) model to decompose accruals into discretionary and non-discretionary components, total accruals need to be computed. Two alternative ways are offered in the literature to compute total accruals: the traditional balance sheet approach and the cash flow statement approach.

The balance sheet approach has been used by several studies (e.g., Dechow et al., 1995; Healy, 1985; Jones, 1991) and according to this approach, total accruals can be calculated using the following equation:

$$TA_{ij,t} = \Delta CA_{ij,t} - \Delta Cash_{ij,t} - \Delta CL_{ij,t} + \Delta DCL_{ij,t} - DEP_{ij,t} \quad (3.3)$$

Where:

TA is total accruals for firm *i* in industry *j* for year *t*,

Δ*CA* is change in current assets during for firm *i* in industry *j* during year *t*,

Δ*Cash* is the change in cash and cash equivalents for firm *i* in industry *j* during year *t*,

Δ*CL* is the change in current liabilities for firm *i* in industry *j* during year *t*,

Δ*DCL* is the change in debt included in the current liabilities for firm *i* in industry *j* during year *t*, and

DEP is depreciation and amortization expense for firm *i* in industry *j* for year *t*.

The cash flow approach is adopted by recent studies (e.g., Chtourou et al., 2001; Habbash et al., 2013; Klein, 2002). According to the cash flows approach, total accruals are computed using the following equation:

$$TA_{ij,t} = EBXI_{ij,t} - CFO_{ij,t} \quad (3.4)$$

Where:

$TA_{ij,t}$ is total accruals for firm *i* in industry *j* for year *t*,

$EBXI_{ij,t}$ is earnings before extraordinary items and discontinued operations firm *i* in industry *j* for year *t*, and

$CFO_{ij,t}$ is cash flows from operating activities for firm *i* in industry *j* for year *t*.

Hribar and Collins (2002) compared the results of total accruals calculation using the balance sheet approach with those calculated using the cash flow approach. They found that employing the balance sheet approach to measure total accruals induces a substantial measurement error that contaminates computations of discretionary accruals and can lead to erroneously concluding that earnings management exists when no such opportunistic activity is present. Accordingly, the current study uses the cash flow approach to calculate total accruals and afterwards cross-sectional version of the performance-adjusted (Kothari et al., 2005) model is adopted to decompose total accruals into normal and abnormal accruals (*AEM* proxy).

Three steps are involved in the estimation of discretionary accruals using the performance-adjusted (Kothari et al., 2005) model. The first step involves employing

the following cross-sectional regression model to estimate the coefficients α_0, α_1, α_2, α_3, and α_4 for each industry *j* in each year *t*:

$$\frac{TA_{ij,t}}{A_{ij,t-1}} = \alpha_0 + \alpha_1 \left[\frac{1}{A_{ij,t-1}}\right] + \alpha_2 \left[\frac{\Delta REV_{ij,t} - \Delta REC_{ij,t}}{A_{ij,t-1}}\right] + \alpha_3 \left[\frac{PPE_{ij,t}}{A_{ij,t-1}}\right] + \alpha_4 ROA_{ij,t-1} + \varepsilon_{ij,t} \quad (3.5)$$

Where:

$TA_{ij,t}$ is total accruals for firm *i* in industry *j* for year *t*, which equals earnings before extraordinary items and discontinued operations in year *t* less cash flows from operating activities during year *t*;

$A_{ij,t-1}$ is the total assets for firm *i* in industry *j* at the beginning of year *t*;

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

$\Delta REC_{ij,t}$ is the change in account receivable for firm *i* in industry *j* during year *t*;

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

$ROA_{ij,t-1}$ is the return on asset for firm *i* in industry *j* for at the beginning of year *t*; and

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

Second, non-discretionary accruals (*NDA*) are estimated using the coefficients α_0, α_1, α_2 α_3, and α_4 obtained from the cross-sectional model employed in the first step.

$$\frac{NDA_{ij,t}}{A_{ij,t-1}} = \alpha_0 + \alpha_1 \left[\frac{1}{A_{ij,t-1}}\right] + \alpha_2 \left[\frac{\Delta REV_{ij,t} - \Delta REC_{ij,t}}{A_{ij,t-1}}\right] + \alpha_3 \left[\frac{PPE_{ij,t}}{A_{ij,t-1}}\right] + \alpha_4 ROA_{ij,t-1} \quad (3.6)$$

Finally, having estimated non-discretionary accruals (*NDA*) from the previous equation, the amount of discretionary accruals (*DA*) for firm *i* in industry *j* for year t is calculated as the difference between the firm's total accruals (*TA*) and its non-discretionary accruals (*NDA*) as follows:

$$\frac{DA_{ij,t}}{A_{ij,t-1}} = \left[\frac{TA_{ij,t}}{A_{ij,t-1}}\right] - \left[\frac{NDA_{ij,t}}{A_{ij,t-1}}\right] \quad (3.7)$$

3.5.1.2 Real earnings management (*REM*) variables

The current study considers three types of real earnings management activities: sales manipulation, overproduction, cutting discretionary expenditures including selling, general, and administrative (*SG&A*) expenditures and research and development (*R&D*).

Sales manipulation is defined as the managers' attempts to temporarily increase sales during the current period through offering price discounts or more lenient credit terms (Roychowdhury, 2006). Such discounts and lenient credit terms will boost current period earnings and at same time will result in lower cash flows (Cohen, Dey, & Lys, 2008). Abnormal cash flows from operations are used to capture the management of earnings through sales manipulation. They are measured by first estimating the normal cash flows from operating activities (*CFO*) using the model developed by Dechow, Kothari, and Watts (1998) and applied subsequently by several studies (e.g. Cohen et al., 2008; Cohen & Zarowin, 2010; Roychowdhury, 2006; Visvanathan, 2008), which expresses normal cash flow from operations as a linear function of sales and change in sales in the current period. The following cross-sectional regression is run for every industry and year to estimate the normal *CFO*:

$$\frac{CFO_{ij,t}}{A_{ij,t-1}} = \alpha_0 + \alpha_1\left[\frac{1}{A_{ij,\,t-1}}\right] + \alpha_2\left[\frac{S_{ij,t}}{A_{ij,\,t-1}}\right] + \alpha_3\left[\frac{\Delta S_{ij,t}}{A_{ij,t-1}}\right] + \varepsilon_{ij,t} \quad (3.8)$$

Where:

$CFO_{ij,t}$ is the cash flows from operating activities for firm *i* in industry *j* during year *t*,

$A_{ij,t-1}$ is the total assets for firm *i* in industry *j* at the beginning of period *t*,

$S_{ij,t}$ is the sales for firm *i* in industry *j* during year *t*, and

$\Delta S_{ij,t}$ is the change in sales for firm *i* in industry *j* during year *t*, which equals $(S_t - S_{t-1})$.

The coefficients of the previous model are used to estimate the normal *CFO* for each year. The abnormal *CFO* (*A_CFO*) is calculated by subtracting a firm's actual *CFO* from the normal *CFO*, which equals the estimated residual from the previous model.

Overproduction refers to the process of producing more goods than needed to meet the expected demand (Roychowdhury, 2006). Managers may manipulate earnings upward through increasing production with the aim of spreading fixed overhead costs over more units and thus reducing the cost of goods sold (*COGS*) of the current period. Consistent with Roychowdhury (2006), Cohen et al. (2008), and Zang (2012) the following model is used to estimate the normal production costs for each industry *j*:

$$\frac{PROD_{ij,t}}{A_{ij,t-1}} = \alpha_0 + \alpha_1\left[\frac{1}{A_{ij,\,t-1}}\right] + \alpha_2\left[\frac{S_{ij,t}}{A_{ij,\,t-1}}\right] + \alpha_3\left[\frac{\Delta S_{ij,t}}{A_{ij,t-1}}\right] + \alpha_4\left[\frac{\Delta S_{ij,t-1}}{A_{ij,t-1}}\right] + \varepsilon_{ij,t} \quad (3.9)$$

Where:

$PROD_{ij,t}$ is the actual production costs for firm *i* in industry *j* during year *t*, which is defined as the sum of cost of goods sold ($COGS_{ij,t}$) for firm *i* in industry *j* in year *t* and the change in inventory ($\Delta INV_{ij,t}$) for firm *i* in industry *j* during year *t*,

$A_{ij,t-1}$ is the total assets for firm *i* in industry *j* at the beginning of year *t*,

$S_{ij,t}$ is the sales for firm *i* in industry *j* during year *t*,

$\Delta S_{ij,t}$ is the Change in sales for firm *i* in industry *j* during year *t*, which equals ($S_t - S_{t-1}$), and

$\Delta S_{ij,t-1}$ is the Change in sales for firm *i* in industry *j* during year *t-1*, which equals ($S_{ij,t-1} - S_{ij,t-2}$).

Abnormal production costs (*A_PROD*) is measured as the estimated residual from previous model (Actual productions costs less normal production costs). The higher the residual, the larger is the amount of goods overproduction, and thus the greater is the increase in reported earnings through reducing the cost of goods sold (Zang, 2012).

Cutting of Discretionary expenses (DISX) is another activity through which managers can manipulate earnings. Decreasing such expenses will boost current period earnings. It could also lead to higher *CFO* in the current period (at the risk of lower future *CFO*), if these expenses are generally paid in the form of cash (Cohen et al., 2008; Roychowdhury, 2006). Following Roychowdhury (2006), the normal level of *DISX* can be estimated using the following model:

$$\frac{DISX_{ij,t}}{A_{ij,t-1}} = \alpha_0 + \alpha_1 \left[\frac{1}{A_{ij,t-1}}\right] + \alpha_2 \left[\frac{S_{ij,t-1}}{A_{ij,t-1}}\right] + \varepsilon_{ij,t} \qquad (3.10)$$

Where:

$DISX_{ij,t}$ is the sum of selling, general, and administrative (*SGA*) expenses and research and development (*R&D*) costs incurred for firm *i* in industry *j* during year *t*;

$A_{ij,t-1}$ is the total assets for firm *i* in industry *j* at the beginning of year *t*; and

$S_{ij,t-1}$ is the sales for firm *i* in industry *j* during year *t-1*.

The methodology outlined for the calculation of abnormal *CFO* and production costs is used to estimate abnormal discretionary expenditures (*A_DISX*) as well. In

other words, the coefficients of the previous model are used to estimate the normal discretionary expenditures for each year and the *A_DISX* is calculated by subtracting a firm's actual discretionary expenditures expenses from the normal discretionary expenditures expenses.

Overall real earnings management (REM). In order to capture the impact of corporate governance on real earnings management, a comprehensive measure is developed by combining the three individual real earnings management variables: abnormal *CFO*, production costs, and discretionary expenses (Zang, 2012). Abnormal *CFO* and *DISX* costs are multiplied by negative one such that higher values indicate a higher probability of taking decisions to increase reported earnings (Zang, 2012). Abnormal production costs is not multiplied by negative one since a higher production cost indicates overproduction in an effort to reduce cost of goods sold and thus report higher earnings. Accordingly, overall real earnings management (*REM*) is calculated is follows:

$$REM_{ij,t} = \left(-A\_CFO_{ij,t} + A\_PROD_{ij,t} - A\_DISX_{ij,t}\right) \quad (3.11)$$

3.5.2 Independent Variables Measurement

The following section provides detailed information about the measurement of each of the independent variables.

3.5.2.1 Board Independence

Klein (2002) indicated three different methods for measuring board independence. First, she pointed out that board independence could be measured using the percentage of independent directors on the board. Second, the board is considered independent only if all members are independent directors. Finally, the board is considered independent when the majority of the board members are independent. According to

the last method, a dichotomous variable is used to measure independence that takes the value of one if the board is composed of more than 50 percent independent outside directors, and zero otherwise.

The present study adopts the percentage of independent directors method in measuring board independence for many reasons. Firstly, this method is the most common one that was used heavily by researchers as a proxy for independence in both the academic and institutional presses (Abdul Rahman & Ali, 2006; Agyekum et al., 2014; Hermalin & Weisbach, 1991; Kang & Kim, 2012; Klein, 2002; Park & Shin, 2004; Peasnell et al., 2005; Xie et al., 2003). Secondly, the percentage of independent directors measure is better than the majority of board measure, because the first method provides a continuous scale of independence that can capture the impact of different percentages of independence on earnings management. However, the later method will not differentiate between levels of independence that are more than 50% i.e. will not differentiate between, for example, 51% and 75% independence. Finally, the second method is not feasible since no boards are comprised merely of outside directors.

3.5.2.2 *CEO* Duality

Provision A.2.1 of the UK Corporate Governance Code states that the roles of the chairman and the CEO should not be exercised by the same person (FRC, 2014c). The code also states that the chairman should be independent at the time of being appointed to the board and it also specifies the independence criteria by which the chairman is judged independent, which are the same criteria for used for judging non-executives as independent directors (FRC, 2014c, provision: B.1.1).

Based on prior studies, a *CEO* duality is measured using a dummy variable that takes the value of "1" if the roles of chairman and *CEO* are combined and "0"

otherwise (Abdul Rahman & Ali, 2006; Garven, 2015; Visvanathan, 2008; Xie et al., 2003).

3.5.2.3 Board Activity

Although the UK Corporate Governance Code is silent concerning the minimum number of meetings that the board is expected to hold during the year, it stresses on the requirement that the board should meet in a sufficiently regular basis in order to discharge its duties effectively (FRC, 2014c, paragraph: A.1.1). It also requires companies to include in their annual reports the number of board meetings and individual attendance by directors (FRC, 2014c, paragraph: A.1.2). Moreover, it requires that the chairman should hold meetings with the non-executive directors without the executives present and that the non-executive directors, led by the senior independent director should meet without the chairman present at least annually to appraise the chairman's performance.

The number of board meetings is the most common proxy used in literature to measure board activity (Chen, Firth, Gao, & Rui, 2006; González & García-Meca, 2014; Kang & Kim, 2012; Xie et al., 2003; Zgarni et al., 2014). In addition to the number of board meetings, Mansor et al. (2013) used the percentage of members' attendance to measure board activity. Min and Verhoeven (2013) used only outsider's attendance of board meetings as a proxy for board activity in monitoring management. They see that face-to-face discussion is a more effective way of communication. They argue that attending board meeting itself provides a strong signal to reflect outsider's intention to monitor executives and that management may interpret independent directors as ineffective members when these directors are not involved in real activities or not attending board meetings.

This research uses the number of board meetings per year as it is the most commonly used measure to proxy for the board activity. It is required for doing the comparison between *AEM* and *REM* as it can be assumed that more board meetings are needed during the year to mitigate *REM* in comparison to *AEM*.

3.5.2.4 Board Size

Two proxies are offered in the literature to measure the size of the board. Jaggi et al. (2009) suggested that board size can be measured using a dummy variable that takes the value of 1 if the total number of board members is greater than the median value of the sample; 0 otherwise. However, the most common proxy used in literature to measure board size is the number of directors on the board (Abdul Rahman & Ali, 2006; Chtourou et al., 2001; Garven, 2015; Kouki et al., 2011; Saleh et al., 2005; Xie et al., 2003). Other studies such as Kang and Kim (2012) and Visvanathan (2008) have imposed a log transformation instead of using the original raw values of the number of board members.

The current study uses the numbers of board members as a measure of board size. It is believed that there is no need for log transformation, as the numbers of board members are not expected to be widely skewed. Moreover, the use of the number of board members rather than a dummy variable improves the accuracy of the measurement, as continuous variables are more precise than dummy variables.

3.5.3 Control Variables

In addition to the independent variables discussed above, a number of variables related to the firm characteristics, audit quality and ownership structure are included in the

current study to control their impact on the governance or earnings management process. These control variables and their measurement methods are described below.

3.5.3.1 Firm Performance

Several studies included firm performance as a control variable (Abdul Rahman & Ali, 2006; González & García-Meca, 2014; Habbash et al., 2013; Hutchinson et al., 2008). Hutchinson et al. (2008) pointed out that managers of low performance firms are expected to manipulate earnings figures upward with the intention of making their firms more attractive. Lee, Li, and Yue (2006) found a positive association between *ROA* and the amount of managed earnings.

The current study includes firm performance as a control variable. Return on assets (*ROA*) is employed as a measure of firm performance. It is used as an indicator of the degree of management efficiency in utilising the corporate resources (assets) that belong ultimately to the company owners (Habbash, 2013), and it is calculated by the ratio of earnings before interest and taxes to total assets.

3.5.3.2 Firm Growth

Following prior studies, the present study controls for firm growth opportunities (Beasley, 1996; Dimitropoulos & Asteriou, 2010; González & García-Meca, 2014; Habbash, 2013; Park & Shin, 2004). McNichols (2000) found that firms with high growth rates are more likely to use discretionary accruals and engage in earnings management compared to firms with lower growth. Matsumoto (2002) contended that high-growth firms have the incentive to manage earnings upward in an effort to avoid negative earnings surprises. They face greater pressure to maintain their growth rates (Carcello & Nagy, 2004). Their managers may be motivated to misstate the financial

statements during a downturn to give the appearance of stable growth (Beasley, 1996). Moreover, it is easier for high-growth firms to engage in earnings management than low-growth or stagnant firms because it is generally harder to see through the business activities of firms with high growth rates (Park & Shin, 2004).

Based on prior research, the firm's growth opportunities are measured by dividing the market value of firm's equity by the book value of equity at the end of the year (Abdul Rahman & Ali, 2006; Dimitropoulos & Asteriou, 2010). It is essential to include that variable when examining the association between corporate governance and earnings management to control its impact on earnings management as indicated in literature that firms involved in manipulating earnings have abnormally high price-to-earnings and market-to-book ratios (Dechow, Ge, Larson, & Sloan, 2011).

3.5.3.3 Financial Leverage

Consistent with prior studies, financial leverage is another control variable used by the current study (Abdul Rahman & Ali, 2006; Alves, 2011; Chen et al., 2007; Park & Shin, 2004). It is the most frequently used proxy in literature for debt covenant violation (DeFond & Jiambalvo, 1994). Watts and Zimmerman (1990) argued that the higher the financial leverage, the greater the probability of a covenant violation and, accordingly, the more likely managers use accounting methods that increase income to avoid such violation. DeFond and Jiambalvo (1994) showed that highly levered companies have more incentive to engage in income-increasing manipulation activities. Richardson, Tuna, and Wu (2002) also found that debt covenants in highly leveraged firms motivate managers to engage in earnings management activities to avoid contract violation.

On the other hand, DeAngelo, DeAngelo, and Skinner (1994) found that financially troubled firms may manage earnings downward to signal to creditors that the firm was facing up to its troubles and to prepare the ground for subsequent contract renegotiations to gain more concessions from them. Moreover, Park and Shin (2004) found that financial leverage is negatively related to earnings management. They suggested that creditors might intensify the monitoring of highly leveraged firms and hence reduce the opportunities to manipulate earnings. Regardless firm leverage is expected to be positively or negatively related to earnings management, it is included in this study as a control variable and it is calculated as the ratio of total long-term debt to total assets (Bartov et al., 2000).

3.5.3.4 Audit Quality

The current study also includes the quality of the external auditor as a control variable. Prior studies found that hiring highly reputed external auditors significantly influences the magnitude of accrual earnings management (Becker, Defond, Jiambalvo, & Subramanyam, 1998; Francis, Maydew, & Sparks, 1999; Gul, Lynn, & Tsui, 2002; Kim, Chung, & Firth, 2003). Becker et al. (1998) found that firms audited by highly reputed auditors report lower levels of discretionary accruals than firms employing other auditors. In contrast to low–quality auditors, high–quality auditors are more likely to detect doubtful accounting practices and to a certain extent may induce management to follow accounting practices as prescribed by the accounting standards (Abdul Rahman & Ali, 2006).

Concerning the impact of the audit quality on real earnings management, it is not clear whether the external auditor can play a significant role in mitigating real earnings management because it is not considered a violation of the promulgated

accounting principles. On one hand, one could expect that there is no relation between auditing and real earnings management as this type of earnings management is beyond the scope of control and responsibility of the external auditor (Francis, Hasan, & Li, 2011). On the other hand, since auditing play an important role in curbing accrual earnings management, managers may shift to manage earnings through real activities. Therefore, a positive relation is expected between audit quality and real earnings management (Chi, Lisic, & Pevzner, 2011). Moreover, O'Molley (1993) contended that investors and other stakeholders who suffer losses as a result of their firms' poor financial performance may consider the auditors held liable for their losses, even if the auditors are not directly responsible, as these auditors are perceived in this case as they did nothing to prevent, minimize, or indeed to predict these losses. To avoid being sued by these parties, high–quality auditors of firms engaging in real earnings manipulation may report such activities to the audit committee or may even resign from the audit engagement (Kim & Park, 2014). In either way, one can expect a negative association between audit quality and real earnings management.

Similar to Balsam, Krishnan, and Yang (2003), Dunn and Mayhew (2004), and Niu (2006), the present study uses auditor industry specialization to proxy for audit quality. It is measured by the total number of firms in any industry audited by specific auditor divided by the total number of firms in that industry for the year (Mayhew & Wilkins, 2003).

3.5.3.5 Managerial Ownership

Jensen and Meckling (1976) posited that as managerial ownership increases, the interests of management will be more closely aligned with those of the other shareholders and, accordingly, the need for intense board monitoring will decrease.

Warfield, Wild, and Wild (1995) found a negative association between managerial ownership and earnings management measured by the absolute value of discretionary accruals. Following prior studies (Bradbury, Mak, & Tan, 2006; Chen et al., 2007; Habbash, 2013), managerial ownership is added in the current study as a control variable. It is measured as the total number of shares held by executive directors divided by the total number of shares outstanding (Habbash, 2013; Larcker & Richardson, 2004).

3.5.3.6 Ownership Concentration

There are two views concerning the association between outside blockholders and earnings management. On one hand, outside shareholders owning large blocks of the firm's shares are expected to serve a significant role in monitoring earnings management activities (Ali, Salleh, & Hassan, 2008). Dechow et al. (1996) provided evidence that outside blockholder ownership is negatively associated with earnings management. On the other hand, outside blockholders may intervene in the firm's management and induce managers to engage in income–increasing earnings management activates and report favourable financial performance in order to maximise their private benefits (Zhong, Gribbin, & Zheng, 2007). The later view is evidenced by Kim and Yoon (2008), who documented a positive association between earnings management and ownership concentration.

Based on the previous discussion, the current study controls the impact of ownership concentration when examining the association between corporate governance and earnings management. Following Peasnell et al. (2005), ownership concentration control variable is calculated as an indicator variable taking the value of

one if the firm has an outside shareholder owning 10% or more of the outstanding shares, and zero otherwise.

3.6 Main Results

3.6.1 Descriptive Statistics

Descriptive statistics for the explanatory variables for the two models are reported in *Table 3-2*. The average proportion of independent non-executive directors on boards is 61%. This percentage is higher than those (44%, 45% and 43%) reported by Habbash (2013), Garcia Osma (2008) and Peasnell et al. (2005) respectively, which indicates that more *FTSE* 350 companies in the recent years are complying with the UK Corporate Governance Code (FRC, 2014c) requirement of having at least half the board, excluding the chairman, should be independent. This increase in the proportion of independent directors is evidenced by Liao, Luo, and Tang (2015) who reported 55% for a sample of *FTSE* 350 firm in 2011. The average board size is nine which is close to the figure of eight members that was reported by Peasnell et al. (2005) for a sample of UK firms with fiscal year ends between June 30, 1993 and May 31, 1996, and same to the figure reported by Habbash (2013) for also a sample of UK firms but with fiscal year ends between December 2005 to December 2007. The average size of UK boards is within the optimal range suggested by agency theorists (Jensen, 1993; Lipton & Lorsch, 1992).

The average frequency of board meetings is nine times a year. It is comparable to those reported by previous studies conducted in the UK and US contexts (e.g. Liao et al. (2015) and Xie et al. (2003)). Regarding duality, the roles of chairman and *CEO* are combined on average in 3% of the observations. Peasnell et al. (2005) reported that 24% of the sampled firms combine the roles of the chairman and the *CEO*. The

difference between the current study's mean duality percentage and that reported by Peasnell et al. (2005) may be due to that Peasnell et al. (2005) sample period had been before companies listed on London Stock Exchange (*LSE*) were required to comply with the UK Combined Code (1998) recommendation of splitting the roles of the chairman and the *CEO*.

Regarding control variables, the means for leverage (*LEV*) and *GROWTH* (0.18 and 4.9 respectively) are similar to the figure reported by Liao et al. (2015) for leverage (0.2) and Garcia Osma (2008) for growth (4.5) respectively. The current study mean growth (*GROWTH*) differs from that reported by Habbash (2013) of 0.11 as the current study used the ratio of the market value of the equity of the firm to its book value at the end of the year as a proxy for the firm growth while Habbash (2013) used the annual sales growth instead. In terms of performance, the average *ROA* is 0.1, which is similar to that reported by Habbash (2013) for a sample of *FTSE* 350 firms between 2005 and 2007. It is worth mentioning that *ROA* is highly skewed and accordingly the performance-adjusted (Kothari et al., 2005) model is employed to measure the discretionary accruals. The mean auditor market share of each sector, used as a proxy for the audit quality (*AUDITQ*), is 37%. Moreover, the percentage of shares held by executive directors (0.03) is comparable to the levels (0.03 and 0.04) reported in previous research in the UK context (Habbash, 2013; Liao et al., 2015). Finally, 55% of the sample has at least one blockholder who owns more than 10% of the company's outstanding shares, which is similar to the result reported by Peasnell et al. (2005).

Table 3-2*: *Descriptive Statistics

Variable	Mean	Median	Min	MAX	SD	Skewness	Kurtosis
BRDIND	61.491	62.5	0	88.89	12.389	-0.760	4.553
BRDSIZE	8.986	9	4	17	2.334	0.918	3.895
BRDACTV	8.985	9	2	27	2.773	1.737	9.386
DUAL	0.030	0	0	1	0.172	5.467	30.878
ROA	0.118	0.096	-0.618	3.161	0.201	10.544	146.163
GROWTH	4.916	2.647	-112.216	895.232	34.350	21.303	537.859
LEV	0.179	0.162	0	1.001	0.155	0.829	3.787
AUDITQ	37.013	33.33	3.33	100	17.535	1.273	5.656
MNGTOWN	0.032	0.002	0	0.715	0.104	4.235	21.428
BLOCK	0.548	1	0	1	0.498	-0.193	1.037
DA	0.047	0.032	0.000	0.776	0.062	5.844	56.166
REM	-0.012	0.040	-3.624	2.056	0.488	-1.320	11.094

Variable definitions:
BRDIND = The number of independent directors divided by the total number of directors on the board.
BRDSIZE = The number of directors on the board.
BRDACTV = The number of board meetings per year.
DUAL = A dummy variable that takes the value of "1" if the roles of chairman and CEO are combined and "0" otherwise.
ROA = The ratio of earnings before interest and taxes to total assets.
GROWTH = The market value of firm's equity divided by the book value of equity at the end of the year.
LEV = The ratio of total long–term debt to total assets.
AUDITQ = The total number of firms in any industry audited by specific auditor divided by the total number of firms in that industry for the year.
MNGTOWN = The total number of shares held by executive directors divided by the total number of shares outstanding.
BLOCK = A dummy variable that takes the value of 1 if the firm has an outside shareholder owning 10% or more of the outstanding shares, and 0 otherwise.
DA = Accruals-based earnings management.
REM = Real activities earnings management.

For earnings management variables, *DA* as a proxy for *AEM* has an approximate mean value of 0.05, which is comparable with the findings of prior research such as 0.06 for a sample of *FTSE* companies with fiscal year ended on March 2007 (Sun, Salama, Hussainey, & Habbash, 2010). The average value for *REM* is –0.01. It differs from the figure reported by Garcia Osma (2008) of 0.35 for a sample of 3,438 observations of UK firms as Garcia Osma (2008) examined only one real activity for managing earnings, *R&D* cutting, while the current study takes into consideration different activities.

The correlation matrix for all variables used in the first and second models is presented in *Table 3-3*. In general it shows that there is no multicollinearity among variables as none of the variables correlates above 80% (Hair, Black, Babin, & Anderson, 2010). The highest reported coefficient is 72% between *ROA* and *GROWTH*. This result is expected as it is documented in previous research (Al-Zyoud, 2012). In order to further investigate whether larger correlations may indicate a multicollinearity issue, the current study calculates the variance inflation factor (*VIF*) and the results are shown in *Table 3-4*. If the variables have *VIF* values greater than 10, then these variables are considered to have multicollinearity problems (Gujarati & Porter, 2009; Hair et al., 2010). All variables have *VIF* values that are approximately range between 1.03 and 2.28 for the *AEM* model and range from 1.03 to 2.27 for the *REM* model and tolerance values that are higher than 0.10 suggesting that there is no multicollinearity problem among the study variables.

Table 3-3: Correlation Matrix

	BRDIND	***BRDSIZE***	***BRDACTV***	***DUAL***	***ROA***	***GROWTH***	***LEV***	***AUDITQ***	***MNGTOWN***	***BLOCK***	***DA***	***REM***
BRDIND	1											
BRDSIZE	0.118***	1										
BRDACTV	-0.015	-0.080**	1									
DUAL	-0.149***	0.098***	0.063*	1								
ROA	-0.002	-0.048	-0.039	0.056	1							
GROWTH	0.021	0.006	-0.007	-0.025	0.723***	1						
LEV	0.078**	0.138***	-0.068**	-0.070**	-0.146***	-0.069**	1					
AUDITQ	0.121***	0.194***	-0.071**	0.150***	-0.047	-0.033	-0.059*	1				
MNGTOWN	-0.168***	-0.115***	0.007	0.141***	0.047	-0.003	-0.212***	0.036	1			
BLOCK	-0.204***	-0.111***	0.004	0.065*	-0.098***	-0.042	-0.047	-0.041	0.219***	1		
DA	-0.143***	-0.039	0.074**	0.068**	0.040	0.012	-0.124***	0.007	0.183***	0.110***	1	
REM	-0.101***	0.028	0.011	-0.136***	-0.165***	-0.066*	0.133***	0.087**	-0.0316	0.056	-0.114****	1

* denotes significance at the 0.1 level, ** denote significance at the 0.05 level, and *** denote significance at the 0.01 level.

Variable definitions:
BRDIND = The number of independent directors divided by the total number of directors on the board.
BRDSIZE = The number of directors on the board.
BRDACTV = The number of board meetings per year.
DUAL = A dummy variable that takes the value of "1" if the roles of chairman and CEO are combined and "0" otherwise.
ROA = The ratio of earnings before interest and taxes to total assets.
GROWTH = The market value of firm's equity divided by the book value of equity at the end of the year.
LEV = The ratio of total long–term debt to total assets.
AUDITQ = The total number of firms in any industry audited by specific auditor divided by the total number of firms in that industry for the year.
MNGTOWN = The total number of shares held by executive directors divided by the total number of shares outstanding.
BLOCK = A dummy variable that takes the value of 1 if the firm has an outside shareholder owning 10% or more of the outstanding shares, and 0 otherwise.
DA = Accruals-based earnings management.
REM = Real activities earnings management.

Table 3-4*: *VIF Test Results

	***AEM* model**				***REM* model**			
Variable	**VIF**	**SQRT VIF**	**Tolerance**	**R-Squared**	**VIF**	**SQRT VIF**	**Tolerance**	**R-Squared**
BRDIND	1.140	1.070	0.876	0.124	1.120	1.060	0.891	0.109
BRDSIZE	1.100	1.050	0.908	0.092	1.100	1.050	0.908	0.092
BRDACTV	1.030	1.020	0.970	0.030	1.030	1.020	0.968	0.032
DUAL	1.150	1.070	0.868	0.132	1.110	1.050	0.901	0.099
ROA	2.280	1.510	0.440	0.560	2.270	1.510	0.441	0.559
GROWTH	2.160	1.470	0.463	0.537	2.180	1.480	0.459	0.541
LEV	1.120	1.060	0.896	0.104	1.110	1.050	0.902	0.098
AUDITQ	1.140	1.070	0.878	0.122	1.110	1.060	0.897	0.103
MNGTOWN	1.140	1.070	0.880	0.120	1.160	1.080	0.863	0.137
BLOCK	1.110	1.050	0.901	0.099	1.110	1.050	0.899	0.101
REM	1.110	1.050	0.899	0.101				
DA					1.070	1.030	0.937	0.064
Mean *VIF*			1.32		**Mean *VIF***		1.31	

Variable definitions:
BRDIND = The number of independent directors divided by the total number of directors on the board.
BRDSIZE = The number of directors on the board.
BRDACTV = The number of board meetings per year.
DUAL = A dummy variable that takes the value of "1" if the roles of chairman and CEO are combined and "0" otherwise.
ROA = The ratio of earnings before interest and taxes to total assets.
GROWTH = The market value of firm's equity divided by the book value of equity at the end of the year.
LEV = The ratio of total long–term debt to total assets.
AUDITQ = The total number of firms in any industry audited by specific auditor divided by the total number of firms in that industry for the year.
MNGTOWN = The total number of shares held by executive directors divided by the total number of shares outstanding.
BLOCK = A dummy variable that takes the value of 1 if the firm has an outside shareholder owning 10% or more of the outstanding shares, and 0 otherwise.
DA = Accruals-based earnings management.
REM = Real activities earnings management.

3.6.2 Multivariate regression

As an extension to the correlation analysis performed in the previous section, multivariate regressions are employed to gauge the explanatory power of the independent variables against *DA* and *REM*. Although the ordinary least squares (*OLS*) regression is considered one of the powerful multivariate regressions, it cannot be employed as one of its conditions of having normally distributed variables was not met in the current study. It can be seen from the descriptive statistics in *Table 3-2* that the dependent variables and most of the independent variables are not normally distributed since their skewness and kurtosis values are not within the standard range for variables to be normally distributed of ±1.96 and ±3 respectively (Byrne, 2010, p. 103; Hair et al., 2010). In addition, Kao and Chen (2004) suggested that *OLS* is not suitable for regressions having the dependent variable expressed in absolute terms (i.e. limited to positive values). Instead, the current study estimates the multivariate regressions using either the random effect method or the fixed effect method. The Hausman (1978) specification test is used to show which estimator approach is more appropriate. The null hypothesis is that the preferred model is random effects versus the alternative the fixed effects (Greene, 2012, p. 379). If the *p*-value of estimated chi-square statistics is less than 0.05, the random effect will be rejected (Gujarati & Porter, 2009, p. 604). The results of the Hausman (1978) test show that the differences between the two methods are insignificant for the two models and thus the random effect is appropriate for both *AEM* and *REM* models.

The Modified Wald test for groupwise heteroscedasticity and the Wooldridge test for autocorrelation in panel data are also used to check whether the study models suffers from heteroscedasticity and serial correlation. The null hypothesis for these two tests are that there is no heteroscedasticity nor serial correlation in the study

models respectively. If the *p*-value of one of these tests is significant, then the null hypothesis will be rejected, suggesting the presence of heteroscedasticity or serial correlation (Baum, 2001; Drukker, 2003). Results for the two tests are reported in Table 3-5. Both show significant *p*-values. Therefore, the null hypothesis has to be rejected, indicating the presence of heteroscedasticity and serial correlation problems in the two models. To overcome these issues, the current study uses clustered standard errors (Rogers standard errors) to correct for both heteroscedasticity and serial correlation (Hoechle, 2007).

Table 3-5: Governance Models Heteroscedasticity and Autocorrelation Tests' Results

	AEM	***REM***
Modified Wald test for groupwise Heteroscedasticity	chi^2 = 1.0e+30 *p*-value = 0.000	chi^2 = 2.3e+07 *p*-value = 0.000
Wooldridge test for Autocorrelation in panel data	*F* = 3.989 *p*-value = 0.047	*F* = 19.542 *p*-value = 0.000

3.6.2.1 Results and Discussion of the First Model

The first model (3.1) examines the association between board characteristic and *AEM*. Based on the statistical analysis shown in the first column of *Table 3-6*, the *F*-statistic for the model is significant and the overall adjusted-R^2 is 7.56%, which is lower than that documented in a previous UK studies conducted by Habbash (2013) and Peasnell et al. (2005) et al. (2005). The low value of adjusted-R^2 in this study indicates that there are other factors that strongly explain the variation in the level of *AEM*.

Consistent with the first hypothesis, *BRDIND* is statistically significant (β = --0.001) and negatively related to *DA*, suggesting that boards with higher proportion of independent directors are more likely to constrain *AEM*. This finding is consistent with the expectations of the agency theory and the results reported by previous research (e.g. Habbash (2013) and Peasnell et al. (2005) in the UK context and Klein (2002)

and Xie et al. (2003) in the US context), which indicated that having independent directors on the board enhances its monitoring power over top management.

The multivariate findings also indicate that *DUAL* (β = 0.005) is insignificantly related to *DA* and thus the second hypothesis and the agency theory prediction are not supported. This finding is consistent with the results reported by previous research, which reported an insignificant association between duality and *AEM* (Abdul Rahman & Ali, 2006; Ghosh et al., 2010; Iqbal & Strong, 2010; Peasnell et al., 2005; Xie et al., 2003). One possible explanation for this insignificant association is that there is a very limited number of companies included in the sample, in which the chairperson and *CEO* roles are combined and some of these companies combine the roles temporarily until the appointment of a new *CEO*.

Inconsistent with the third hypothesis, *BRDACTV* (β = 0.002 at *p*-value = 0.128) is statistically insignificant suggesting that there is an insignificant relationship between the number of board meetings as a proxy for the board activity (*BRDACTV*) and *AEM*. This finding is in line with the results reported by Abdul Rahman and Ali (2006) and is contradicting with the findings of Xie et al. (2003) in the US and González and García-Meca (2014) in Latin America. A possible explanation for that insignificant association is that the frequency of board meetings may not always provide an indicator for the effectiveness of the board in constraining the management opportunistic behaviour as much of the time of those meetings is consumed in doing routine tasks, and thus limiting the opportunities for the board to exercise its oversight function over management (Vafeas, 1999).

Regarding the size of the board, *BRDSIZE* (β = 0.001) is positively associated with *AEM* suggesting that larger boards are ineffective in performing its oversight function over top management. The relationship is insignificant and thus the fourth

hypothesis and the agency theorists' argument, that that larger boards are less effective in performing the oversight of management, are not supported. However, the reported positive association is in line with the findings reported by Abdul Rahman and Ali (2006), Beasley (1996), Kouki et al. (2011), and Mansor et al. (2013); and contradicting to the results reported by Peasnell et al. (2005) for a sample of UK firms between 1993 and 1996. A plausible explanation on this contradictory may be due to that the average proportion of non-executive directors (either independent or not) on the board reported by Peasnell et al. (2005) is 42.7%. This finding indicates that the majority of the board is composed of executive directors and more independent directors are needed to be appointed on the board for these sampled firms to comply with the Cadbury (1992) and the UK Combined Code (1998) recommendations. Consequently, increasing the size of the board means more board independence and thus lowering *AEM*. The insignificant association shown in current study results may be due to that the sample, on average, constitute of independent boards and increasing the size of the board may have insignificant impact on the board independence and thus insignificant impact on earnings management.

Regarding control variables, *ROA*, *GROWTH*, *AUDITQ*, *BLOCK*, and *MNGTOWN* are insignificantly associated with *DA*. These findings are consistent with the results reported by Abdul Rahman and Ali (2006), Peasnell et al. (2005) and Habbash (2013) respectively. Finally, *LEV* is significant and negatively related to *DA*. The negative sign of the *LEV* coefficient indicates that highly leveraged firms tend to be more conservative in terms of managing their corporate earnings and this result is consistent with Park and Shin (2004) reported figures who justified their result with the increased creditors monitoring of highly leveraged firms.

Table 3-6*: *Panel Data Regression Results

	1st model*: *AEM	***2nd model*: *REM***
BRDIND	-0.001** (-2.02)	-0.003* (-1.65)
BRDSIZE	0.001 (0.53)	-0.015* (-1.81)
BRDACTV	0.002 (1.52)	0.009 (1.35)
DUAL	0.005 (0.19)	-0.233** (-2.08)
ROA	0.010 (0.21)	-0.247 (-1.27)
GROWTH	-0.000 (-0.03)	-0.000 (-0.11)
LEV	-0.028* (-1.78)	0.103 (0.8)
AUDITQ	0.000 (0.42)	0.003** (1.97)
MNGTOWN	0.080 (1.37)	0.270 (0.93)
BLOCK	0.008 (1.58)	-0.015 (-0.55)
REM	-0.016* (-1.76)	
DA		-0.505 (-1.21)
constant	0.055*** (2.77)	0.130 (1.12)
Adjusted-R^2	**7.56%**	**6.68%**

*, **, and *** denote significance at the 10%, 5%, and 1% levels respectively.
Robust *t*-statistics (*z*-statistics) appear in parentheses.

Variable definitions:
BRDIND = The number of independent directors divided by the total number of directors on the board.
BRDSIZE = The number of directors on the board.
BRDACTV = The number of board meetings per year.
DUAL = A dummy variable that takes the value of "1" if the roles of chairman and CEO are combined and "0" otherwise.
ROA = The ratio of earnings before interest and taxes to total assets.
GROWTH = The market value of firm's equity divided by the book value of equity at the end of the year.
LEV = The ratio of total long–term debt to total assets.
AUDITQ = The total number of firms in any industry audited by specific auditor divided by the total number of firms in that industry for the year.
MNGTOWN = The total number of shares held by executive directors divided by the total number of shares outstanding.
BLOCK = A dummy variable that takes the value of 1 if the firm has an outside shareholder owning 10% or more of the outstanding shares, and 0 otherwise.
DA = Accruals-based earnings management.
REM = Real activities earnings management.

In summary, the results from the multivariate analysis agree with the expectations of the agency theory, suggesting that firms having boards with the

majority of independent directors are less likely to manage their earnings using accruals.

3.6.2.2 Results and Discussion of the Second Model

The second model of this study examines the effectiveness of the board of directors in mitigating *REM*. *Table 3-6* reports, in its second column, the regression results for this model. The *F*-statistic for the model is significant and the adjusted-R^2 is 6.68%, which is lower than that reported by Garcia Osma (2008) that examined the impact of board independence on one *REM* activity. It is also lower than those reported in other studies that examined the impact of corporate governance on different *REM* activates (e.g. Kang & Kim, 2012). One possible justification is that these studies included additional explanatory variables for the corporate governance other than board characteristics (e.g. explanatory variables for the audit committee characteristics).

The first hypothesis of this study predicts that board independence (*BRDIND*) is negatively associated with the *REM*. Multivariate regression shows a significant negative coefficient for *BRDIND* (β = -0.003) and accordingly this result is consistent with the hypothesis and the expectations of the agency theory proponents who argue that having independent directors on the board enhances its monitoring power over top management (Fama, 1980; Weisbach, 1988). It is also consistent with previous research conducted by Garcia Osma (2008), who indicated that independent boards efficiently constrain the manipulation of *R&D* spending in UK and the findings conducted in other contexts (e.g. the Asian and US contexts), which suggest that board independence mitigates *REM* activities (Kang & Kim, 2012; Visvanathan, 2008). The negatively significant findings in the two earnings management models suggest that

hiring independent directors on the board is considered one of the effective controlling mechanisms that mitigates both *AEM* and *REM*.

Hypothesis 2 predicts that *CEO* duality (*DUAL*) is positively associated with the level of earnings management. The significant negative coefficient (β = -0.233) on *DUAL* rejects this hypothesis and contradicts the expectations of the agency theory proponents concerning duality. This finding is inconsistent with the results reported by previous research, which showed an insignificant association between duality and *REM* (Garven, 2015; Visvanathan, 2008). As mentioned in the discussion section of the first model results that there is a very limited number[1] of observations included in the sample, in which the roles of the chairperson and the *CEO* are combined and most of the companies that combine the roles are family-controlled firms. In that type of business, executives have incentives to manage reported earnings downward compared to non-family firms (Achleitner, Günther, Kaserer, & Siciliano, 2014), which justifies the negative association between combining the *CEO* and chairperson roles and *REM*.

For board activity, panel data regression results show a positive coefficient for *BRDACTV* (β = 0.009) and that the frequency of board meetings, as a proxy for the board activity (*BRDACTV*), is insignificantly related to real activities earnings management (*REM*). Although, this result is in line with the findings reported by Garven (2015) and Kang and Kim (2012), it does not support the study proposition that mitigating *REM* activities requires more board meetings as these activates are varied and can occur many times throughout the year. One plausible justification is that much of the time of the meetings that the board holds during the year is consumed in doing routine tasks rather than discussing the cases with top management, which

[1] On average 3% of the sampled observations combined the *CEO* and chairperson roles.

represent opportunities for them to make discretionary decisions regarding aggressive sales promotions or overproduction. This justification of spending much of the time of the board meetings is supported by the insignificant association between *BRDACTV* and *AEM* reported in the results of the first model.

The fourth hypothesis predicts that there is a positive association between the size of the board (*BRDSIZE*) and *REM*. The multivariate regression results show a negative coefficient for *BRDSIZE* (β = -0.015). This finding rejects the fourth hypothesis and contradicts the agency theory prediction as a significant relationship is found between these two variables. This finding is consistent with the results reported by Kang and Kim (2012) for a sample of Korean firms but is contradictory to those reported by Garven (2015) and Visvanathan (2008) who reported an insignificant relationship between the size of the board and *REM*. In general, this contradiction in board size results is expected as its effectiveness of the in mitigating earnings management depends on many factors, for instance whether increasing the size of the board will bring more independent directors or directors with diverse educational and industrial backgrounds, skills and experiences; and whether these diverse experiences are relevant to the company operations or not. Comparing the results of the two regression models shows that larger boards are more effective in mitigating *REM* than *AEM*. This result may be due to that *REM* could be conducted through different activities and thus requiring more directors with varied backgrounds and experiences to mitigate such type of earnings management while accounting and finance background is enough for *AEM*.

For control variables, *ROA*, *GROWTH*, *LEV*, *MNGTOWN*, *BLOCK*, and *DA* are insignificantly associated with *REM*. However, *AUDITQ* is significantly and positively associated with *REM*. Compared to the insignificant association reported in

the analysis of the *AEM* model; *AUDITQ* results indicate that executives of firms audited by highly specialised auditors might shift to manage corporate earnings through real activities.

3.6.3 Endogeneity and two-stage least squares (*2SLS*) regression

Literature shows that endogeneity is considered a major methodological concern for the accounting and finance studies that rely on regression analysis to draw causal inferences, especially when the empirical models contain corporate governance or ownership variables (Abdallah, Goergen, & O'Sullivan, 2015; Fields & Keys, 2003; Gippel, Smith, & Zhu, 2015; McKnight & Weir, 2009; Roberts & Whited, 2013, p. 494). It may be caused by omitted variables, measurement errors, and/or simultaneity (John, Samuel, Philippe, & Rafael, 2014, p. 94; Lee, Liang, Lin, & Yang, 2016; Roberts & Whited, 2013, p. 495; Wang, 2015, p. 2579). Simultaneity is the particular form of endogeneity that is often faced in governance and ownership models (McKnight & Weir, 2009; Wang, 2015, p. 2579) and, accordingly, in the current study. As, for instance, the director's willingness to monitor the executives increases with his/her independence and, at the same time, monitoring provides information to be used by stakeholders in deciding whether to retain or to replace the board members and therefore, both the structure of the board and its actions are endogenously derived (Hermalin & Weisbach, 1998). Failure to consider that endogeneity issue causes the results to be inconsistent and biased (Gippel et al., 2015).

To mitigate that bias, one recommended solution is to use the instrumental variable (*IV*) approach (Larcker & Rusticus, 2010; McKnight & Weir, 2009; Wang, 2015, p. 2580). Therefore, the two-stage least squares (*2SLS*) is performed in the current study and following Barnhart and Rosenstein (1998), Coles, Daniel, and

Naveen (2008), Hermalin and Weisbach (1991), Himmelberg, Hubbard, and Palia (1999), and McKnight and Weir (2009), the lagged values of the explanatory variables are used as instruments. However, before reporting the *2SLS* results, it is essential to check whether the *IV* approach is necessary to be used to solve for the endogeneity problem or not as using it will have inefficient results if the endogeneity is not present (Brown, Beekes, & Verhoeven, 2011; Gippel et al., 2015; Wang, 2015, p. 2588). This can be performed using the Hausman (1978) test. Under the null hypothesis, both of the estimators *2SLS* and random or fixed effects (random/fixed effects) are consistent, but random/fixed effects is more efficient as *2SLS* uses only part of the variation in the suspect endogenous variable. Under the alternative hypothesis, random/fixed effects is not consistent. If the null hypothesis is rejected, there is evidence that at least some of the independent variables are indeed endogenous and, thus, the use of *2SLS* is justified assuming the instruments are valid (Brown et al., 2011; Greene, 2012, p. 235; Wang, 2015, p. 2589). The results of the Hausman (1978) test show that there is no significant differences between the estimates of the random effects and *2SLS*, however *2SLS* results will be reported for robustness.

For *2SLS* estimates to be reliable, valid (not-weak) instruments must be chosen that are sufficiently correlated with corporate governance and control variables and asymptotically uncorrelated with the structural error (Brown et al., 2011; Wang, 2015, p. 2590). One way to detect the presence of weak instruments is to check the *F*-statistic of the first stage regression (Wang, 2015, p. 2590). A rule of thumb is that instruments are considered weak if the first stage *F*-statistic is less than 10 (Staiger & Stock, 1997). Another way to test for weak instruments is to assess the Sanderson and Windmeijer (2016) conditional *F*-statistics against the Stock and Yogo (2005) critical values. *Table 3-7* shows that all Sanderson-Windmeijer (*SW*) conditional *F*-statistics exceed Stock

and Yogo (2005) critical value of 20.74, implying that any bias from using the instruments is less 5% of the bias from an *OLS* regression, with a 5% level of significance. However, the *F*-statistics for regressing endogenous variables on the instruments are all significant and above 10 [Staiger and Stock (1997) rule of thumb] with only one exception (*GROWH*). Regarding the *REM* model, results reported in Table 3-8 show that all *SW* conditional *F*-statistics exceed Stock and Yogo (2005) critical value of 19.28 with the exception of *DA* and that the first stage *F*-statistics are all significant and also above 10 with the exception of *BRDACTV*, *DUAL*, *ROA*, *GROWTH* and *DA*. To provide a more efficient estimate of the governance–earnings management relation, the *2SLS* regression is re-estimated with one variable, *GROWTH*, omitted in the *AEM* model and five variables, *BRDACTV*, *DUAL*, *ROA*, *GROWTH* and *DA*, omitted due to the lack of explanatory power in their instrument set in the *REM* model.

Table 3-7: Regressing AEM on Governance tests for weak instruments

	***F*-statistics (*p*-value)**	***SW F*-statistics**
BRDIND	191.24 (0.00)	1286.75
BRDSIZE	232.58 (0.00)	1759.02
BRDACTV	53.49 (0.00)	539.31
DUAL	10.02 (0.00)	116.42
ROA	34.53 (0.00)	62.85
LEV	315.44 (0.00)	2129.54
AUDITQ	660.87 (0.00)	2743.21
MNGTOWN	301.03 (0.00)	2640.78
BLOCK	122.36 (0.00)	506.83
REM	42.82 (0.00)	188.36

Variable definitions:
BRDIND = The number of independent directors divided by the total number of directors on the board.
BRDSIZE = The number of directors on the board.
BRDACTV = The number of board meetings per year.
DUAL = A dummy variable that takes the value of "1" if the roles of chairman and CEO are combined and "0" otherwise.
ROA = The ratio of earnings before interest and taxes to total assets.
LEV = The ratio of total long–term debt to total assets.
AUDITQ = The total number of firms in any industry audited by specific auditor divided by the total number of firms in that industry for the year.
MNGTOWN = The total number of shares held by executive directors divided by the total number of shares outstanding.
BLOCK = A dummy variable that takes the value of 1 if the firm has an outside shareholder owning 10% or more of the outstanding shares, and 0 otherwise.
REM = Real activities earnings management.

Table 3-8: Regressing REM on Governance tests for weak instruments

	***F*-statistics (*p*-value)**	***SW F*-statistics**
BRDIND	28.76 (0.00)	117.12
BRDSIZE	27.20 (0.00)	109.40
LEV	45.24 (0.00)	172.88
AUDITQ	52.29 (0.00)	314.22
MNGTOWN	173.37 (0.00)	581.83
BLOCK	13.06 (0.00)	38.62

Variable definitions:
BRDIND = The number of independent directors divided by the total number of directors on the board.
BRDSIZE = The number of directors on the board.
LEV = The ratio of total long–term debt to total assets.
AUDITQ = The total number of firms in any industry audited by specific auditor divided by the total number of firms in that industry for the year.
MNGTOWN = The total number of shares held by executive directors divided by the total number of shares outstanding.
BLOCK = A dummy variable that takes the value of 1 if the firm has an outside shareholder owning 10% or more of the outstanding shares, and 0 otherwise.

2SLS results for *AEM* are presented in the first column of *Table 3-9*. Compared with the main findings, the results of *2SLS* regressions are relatively consistent, except for the *BRDSIZE*, which is found to be negatively related to *DA* but this change

remains insignificant. The other main variables remained unchanged. In summary, the main finding on *BRDIND* is that it continues to have a significant negative association with *DA*, suggesting that the inference made regarding *BRDIND* in the main finding is robust to the presence of endogeneity.

Regarding *REM*, *2SLS* results are presented in the second column of *Table 3-9*. Compared with the main findings, the results of *2SLS* regressions remain unchanged, except for the *BRDSIZE*, which becomes insignificantly related to *REM*. In summary, the main finding on *BRDIND* is that it continues to have an insignificant negative association with *REM*, while *BRDSIZE* finding may suffer from endogeneity or that there may be other variables that might impact larger boards effectiveness in mitigating *REM*.

Table 3-9: 2SLS Results

	1st model*: *AEM	***2nd model*: *REM***
BRDIND	-0.001**	-0.009**
	(-2.13)	(-2.2)
BRDSIZE	-0.001	0.015
	(-0.32)	(0.88)
BRDACTV	0.001	0.012
	(0.79)	(1.4)
DUAL	0.004	-0.227*
	(0.13)	(-1.74)
ROA	-0.012	-0.193
	(-0.63)	(-0.75)
GROWTH	0.000	-0.000
	(0.85)	(-0.17)
LEV	-0.033*	0.036
	(-1.67)	(0.15)
AUDITQ	0.000	0.003*
	(0.08)	(1.87)
MNGTOWN	0.028	0.080
	(0.86)	(0.24)
BLOCK	0.014*	-0.024
	(1.96)	(-0.2)
REM	-0.009	
	(-1.39)	
DA		-0.791
		(-1.42)
constant	0.070**	0.255
	(2.49)	(0.85)
Adjusted-R^2	**5.46%**	**6.47%**

*, **, and *** denote significance at the 10%, 5%, and 1% levels respectively.
Robust *t*-statistics (*z*-statistics) appear in parentheses.

Variable definitions:
BRDIND = The number of independent directors divided by the total number of directors on the board.
BRDSIZE = The number of directors on the board.
BRDACTV = The number of board meetings per year.
DUAL = A dummy variable that takes the value of "1" if the roles of chairman and CEO are combined and "0" otherwise.
ROA = The ratio of earnings before interest and taxes to total assets.
GROWTH = The market value of firm's equity divided by the book value of equity at the end of the year.
LEV = The ratio of total long–term debt to total assets.
AUDITQ = The total number of firms in any industry audited by specific auditor divided by the total number of firms in that industry for the year.
MNGTOWN = The total number of shares held by executive directors divided by the total number of shares outstanding.
BLOCK = A dummy variable that takes the value of 1 if the firm has an outside shareholder owning 10% or more of the outstanding shares, and 0 otherwise.
DA = Accruals-based earnings management.
REM = Real activities earnings management.

3.7 Conclusions

This research analyses the impact of board composition on both *AEM* and *REM*. It also undertakes a comparison between the board roles in mitigating both techniques of earnings management for a sample of UK listed firms from 2010 through 2014. Findings show a significant negative association between the board independence and both *AEM* and *REM* and a negative association between both *CEO* duality and the size of the board and *REM*. No significant association is found between number of board meetings and the two techniques of earnings management. These results suggest that increasing the size of the board could be considered a monitoring mechanism which effectiveness is subject to hiring independent directors on the board. It might also be subject to other factors such as hiring members with varied combination of qualities and expertise who bring different viewpoints beneficial to the decision-making process. Therefore, the second study discussed in the next chapter examines whether hiring directors with varied expertise, through promoting diversity among the board, is effective in mitigating earnings management.

Results also suggest that *CEO* duality induces executives to manage earnings downward through real activities manipulation, nonetheless, this result might be specific to family firms as most of the companies that combine the *CEO* and chairperson roles in the study sample are family-controlled businesses. Due to the specific nature of and the results that might be specific to family businesses, the third study included in Chapter 4 investigates whether the effectiveness of promoting diversity among the board of directors in mitigating earnings management holds in family-controlled firms.

Chapter 4: Board Diversity and Earnings Management

4.1 Introduction

Boards of directors are considered a crucial part of the corporate structure. They are the link that provide balance and mediate the conflicts of interest between a vast group of shareholders spread all over the world who provide capital and a small group of key managers who use that capital to create value (Mallin, 2019, p. 201; Monks & Minow, 2011, p. 252). Board members are expected collectively to perform the critical function of monitoring of the company practices and provide top management with advice on key corporate decisions (Knyazeva, Knyazeva, & Raheja, 2013). Their effectiveness in performing their functions is likely to depend not only on directors' skills, reputation and other characteristics but also on the interaction between the directors (Giannetti & Zhao, 2017). With the aim of enhancing boards' effectiveness in performing the monitoring and council functions, governments, regulators and public policymakers have recently been developing initiatives to promote diversity on corporate boards. In the UK, for instance, the Financial Reporting Council (*FRC*) has recently paid more attention on the diversity issue through reviewing the UK Corporate governance Code many times. The UK Corporate Governance Code in its 2010 revised version (B.2) introduced a new principle that requires the board to take into consideration the benefits of diversity, such as gender diversity, at the time of searching for and appointing new board members (FRC, 2010c). In 2012, *FRC* revised the code and one of the introduced changes is a new provision (B.2.4) that requires the board to disclose its policy on diversity, such as gender, in the separate section of the annual report, which is concerned with description of the work of the nomination committee (FRC, 2012). Moreover, the 2014 version of the UK Corporate governance code asserts in its preface (Paragraph 3) that not only gender but also race, experience and approach are

important when determining the appropriate balance of skills and attributes that are needed among board members to ensure effective engagement with key stakeholders (FRC, 2014c). A more recent attempt by the UK Government to see more diverse boards has been reflected in the latest women on boards review, the Hampton-Alexander Review (2017). The review recommends a voluntary target of a minimum of 33 per cent females' representation on *FTSE* 350 boards by 2020 and also recommends that *FTSE* 100 companies aim for a minimum of 33 per cent women's representation across their executive committee and direct reports to the executive committee by 2020. In addition, the Parker Review (2017) has recently recommended that each *FTSE* 100 board should have at least one director of colour by 2021, and that *FTSE* 250 boards should meet this target by 2024.

Though regulators' attempts to increase the diversity within corporate boards may be a highly visible effort to demonstrate an absence of discrimination, debate continues about the impact of those measures taken on the effectiveness of boards of directors in performing their functions as board diversity represents both challenges and opportunities for board practice (Adams et al., 2015). The diversity literature suggests that diversity improves group decision-making, but at the same time it adversely impacts group dynamics (Erhardt, Werbel, & Shrader, 2003). Most of the research that investigated board diversity focused on examining the impact of gender diversity on a narrow set of corporate outcomes, typically firm performance (Bernile et al., 2017). However, there is far less research investigating the impact of gender diversity on earnings management. Moreover, other aspects of diversity than gender (e.g. professional background) need also to be investigated with their impact on the board effectiveness in performing its functions (Adams et al., 2015; Hillman, 2015). Therefore, the current research aims to add to the existing board diversity research by

considering two dimensions of board diversity on the effectiveness of the board of directors in performing one of its functions: the monitoring function. In particular, it investigates the role of diversifying the board in mitigating both accrual-based and real activates earnings management.

Findings show that board professional background diversity is positively associated with *REM* while it is insignificantly associated with *AEM*. In addition, no significant association also is found between gender diversity and the two techniques of earnings management. It can be argued that although promoting diversity among board members might have positive impacts such as demonstrating an absence of discrimination, it might also have negative impacts on the board effectiveness in performing its monitoring function.

This study contributes to the literature in several ways. First, in a recent issue of the "Corporate Governance: An International Review" journal, authors contributed to and editors of this special issue argued that much of the work on board diversity has focused on gender diversity (Adams et al., 2015; Hillman, 2015). They called for further research to address unanswered questions related to other forms of diversity and their effect on the board decisions. Therefore, this study tries to fill the research gap by investigating the influence of educational and professional diversity on the board effectiveness in performing its monitoring function. Second, previous work on boardroom diversity typically considered one aspect of diversity (Adams et al., 2015; Hillman, 2015). Ararat et al. (2015) showed that multiple diversity attributes have a compound effect on corporate outcomes. In addition, Anderson, Reeb, Upadhyay, and Zhao (2011) classified variations in board diversity into occupational diversity (education, experience, and profession) and social diversity (gender, ethnicity, and age) based on the proponents of board diversity argument that managers and firms

benefit from directors bringing diverse social and occupational viewpoints to the boardroom. Accordingly, this study considers two diversity variables capturing the professional background and social diversity simultaneously. Investigating these two diversity classifications help explain corporate policies and provide a clearer picture of the compound effect of board diversity on firms' earnings management. Finally, in view of the increasing pressure to promote diversity on corporate boards, the results of this study may have important practical implications for both corporate boards as well as for policymakers and regulators that should be aware of the impact of diversifying the board on its effectiveness in performing its monitoring function.

The remainder of the chapter is structured as follows. Section 2 provides the theoretical bases for promoting diversity on corporate boards. Section 3 reviews the related literature and presents the study hypotheses. Section 4 discusses the data and the empirical methodology. Section 5 shows the main results, and finally section 6 offers conclusions.

4.2 Theoretical Framework

The concept of diversity is most commonly used to refer to "the distribution of personal attributes among interdependent members of a work unit" (Jackson, Joshi, & Erhardt, 2003, p. 802). In the corporate governance context, it refers to the varied combination of qualities, characteristics and expertise possessed by individual board members in relation to board process and decision-making (van der Walt & Ingley, 2003). Diversity can be achieved among the board through including directors with varied combination of age, gender, ethnicity, culture, religion, constituency representation, independence, educational and professional background, knowledge, technical skills and expertise, commercial and industry experience, career and life

experience (van der Walt & Ingley, 2003). Diversity research shows several efforts conducted by researchers to categorize these different types of diversity among team members (e.g. Harrison & Klein, 2007b; Jackson, May, & Whitney, 1995; Maznevski, 1994; Tsui, Egan, & O'Reilly, 1992). Early research on board diversity differentiate between diversity on readily detectable (or observable) attributes and diversity with respect to underlying (or less visible) attributes (Jackson, 1996; Jackson et al., 1995; Maznevski, 1994; Milliken & Martins, 1996; Tsui et al., 1992). *Readily detectable attributes* are easily determinable or visible and can be determined quickly and consensually with only brief exposure to a target person (Jackson, 1996; Milliken & Martins, 1996). Demographic factors such as race or ethnic background, nationality, gender, and age provide examples of this type of attributes (Mishra & Jhunjhunwala, 2013, p. 8). In contrast to readily detectable attributes, *underlying attributes* are less obvious, more difficult to verify, and subject to more interpretation and construal such as education, technical abilities, functional background, or socioeconomic background, personality characteristics, or values (Jackson, 1996; Jackson et al., 1995; Milliken & Martins, 1996; Mishra & Jhunjhunwala, 2013, p. 10). Milliken and Martins (1996) justified the reason for differentiating between those two types of attributes as they argued that when differences between people are visible, they are particularly likely to evoke responses that are due directly to biases, prejudices, or stereotypes.

Harrison and Klein (2007b) proposed an alternative categorisation for team member diversity. They suggested that diversity constructs have three fundamental types: separation, variety, and disparity. Diversity as separation refers to differences in position or opinion among team members, reflecting dissimilarity in a particular attitude or value, especially regarding team goals and processes. It fosters interpersonal conflict and diminishes cohesiveness, and task performance. Alternatively, diversity

as variety represents differences in kind or category, primarily of information, knowledge, content expertise, functional background, range of network ties, or industry experience among team members. These differences among team members may enrich the supply of ideas, skills, unique approaches, contacts, and knowledge available to a team, enhancing its creativity, problem solving, and quality of decision making (Williams & O'Reilly III., 1998). Finally, diversity as disparity indicate differences in concentration of valued social assets or resources such as pay and status among team members. This type of diversity incites within-group competition, differentiation, and (resentful) deviance among some group members. It might also foster conformity, silence, suppression of creativity, and withdrawal (Siegel & Hambrick, 2005). These three types of diversity might have contradictory effects on board effectiveness, and firm performance. While board diversity as variety, may lead to divergent thinking and generation of a large number of strategic alternatives, diversity as disparity and diversity as separation may constrain the board's ability to act as a team and make decisions (Nielsen, 2012). Accordingly, theoretical frameworks and research results could not be generalised to all types of diversity. The current study adopts the Harrison and Klein (2007b)'s definition of diversity and uses "diversity" to describe the distribution of differences among the board of directors with respect to both gender and educational and professional background. The variety perspective is employed in which a more diverse board is a board with more variety with respect to differences in kind, and professional background that are expected to lead to divergent thinking and accordingly enhance the board's monitoring function and its quality of decision making.

Jackson (1996) argued that the implications of those different types of diversity are far-reaching and that no single theory explains the full set of established

relationships between diversity aspects and its numerous consequences. Instead, a variety of theories provides the bases for promoting diversity among work teams including behavioural theories and corporate governance theories. Given that the current study focuses on only the monitoring function of the board of directors, it discusses below only one of the corporate governance theories, the agency theory, which is relevant to the main thesis objective.

The agency theory (Fama, 1980; Fama & Jensen, 1983; Jensen & Meckling, 1976) argues for the positive impacts that diversity might have on organisation performance. It is primarily concerned with the role of board of directors in monitoring/controlling executives' behaviour on behalf of the shareholders. According to that theory, boards are considered a crucial governance mechanism aimed at aligning the interests of management and shareholders and reducing managerial opportunism. Carter, Simkins, and Simpson (2003) argued that board diversity enhances board effectiveness in performing its monitoring and control function. First, a more diverse board would be a better monitor of managers because diversity increases board independence (Carter, D'Souza, Simkins, & Simpson, 2008; Carter et al., 2003). Diverse directors are less likely to collude with inside directors to subvert shareholder interests (Ayuso & Argandoña, 2007). Second, diversity may provide the necessary knowledge, skills and competences for the board to evaluate management and assess business strategies and therefore helps the board in effectively monitoring management performance (Bear, Rahman, & Post, 2010). Supporters of this view contend that diversity directors with a different gender, ethnicity, educational, or cultural background might constitute a more activist board as they might ask questions that would not be questioned by directors with more traditional backgrounds (Carter et al., 2003). Third, board diversity can impact *CEO*−board dynamics as chief

executives are less likely to dominate a diverse board (Nielsen, 2012). Westphal and Zajac (1995) research results support that argument. They found that the power of the *CEO* over the board is positively related to demographic similarity between the *CEO* and board members and that greater demographic similarity between the *CEO* and the board results in more generous *CEO* compensation. However, the last argument was countered by some researchers. They suggest that diversity may not necessarily result in more effective monitoring because diverse board members may be marginalized in some cases especially when minority directors lack appropriate prior experience (Carter et al., 2008; Carter et al., 2003; Rose, 2007; Westphal & Milton, 2000).

4.3 Literature Review and Hypotheses Development

4.3.1 Educational and Professional Background Diversity

4.3.1.1 Conceptual and theoretical background

Educational and professional background diversity among board members reflects their varying degrees of knowledge, skills and expertise, which expected to enhance board capability to generate creative solutions to resolve complex problems and issues and provide a broader scope of inputs that help improve strategy formulation and evaluation (Al-Musali & Ismail, 2015; Heyden, Oehmichen, Nichting, & Volberda, 2015). Bantel and Jackson (1989) argued that executives with differing histories of functional experiences are likely to differ in their attitudes, knowledge, and perspectives and these differences are generally acknowledged as an important precursor to innovation.

Literature suggests that educational diversity in top management team improves firms' performance (Milliken & Martins, 1996). For instance, Smith et al. (1994) indicated that top management team (*TMT*) heterogeneity in terms of the

educational level was positively related to a firm's return on investment (*ROI*) and to growth in sales. Regarding heterogeneity among the board of directors, Kim and Rasheed (2013) showed that board heterogeneity in functional experience and educational specialty is positively related to the stability of returns, suggesting that board heterogeneity increases organizational rationality and further firm performance stability through its more effective control and counsel functions to management. Anderson et al. (2011) found that occupational heterogeneity shows a 50% greater effect on firm performance than social heterogeneity (gender, age, and ethnicity heterogeneity) and that shareholders appear to place greater value on heterogeneity arising from directors' education, profession, and experience than heterogeneity based on directors' gender, age, and ethnicity. However, they indicated that greater heterogeneity does not provide benefits to all firms, instead greater heterogeneity appears to be most beneficial to firms with complex operations indicative of the demand for varying talents, perspectives, and problem-solving skills that a diverse director pool brings to boardroom deliberations.

Dobbin and Jung (2011, p. 813) argued that *"Put a bunch of MBAs in a room and you'll arrive at inferior solutions, and arrive at them more slowly, than if you mix the MBAs with attorneys, accountants, and engineers"*. Further, Westphal (1999, p. 19) indicated that the efficiency of the board of directors' role of counsel to the managers increases when the level of director expertise was relatively high. Kor and Sundaramurthy (2009, p. 985) also argued that outside directors' expertise could be critical in enhancing their monitoring and advising capabilities. Others also indicated that the value of non-executive directors might come from their expertise (Park & Shin, 2004) and that their ability to effectively perform their monitoring role is a function of their attributes (Chtourou et al., 2001). Moreover, Kim and Lim (2010) contended that

independent directors with certain types of expertise tend to take on certain roles in their companies. For instance, Agrawal and Knoeber (2001) found that independent directors with backgrounds in politics, law or government tend to play political roles in larger firms and that politically experienced directors are more prevalent in firms where sales to government, exports, and lobbying are greater, whereas lawyer-directors are more prevalent in firms facing costly environmental regulation. Harris (2014) argued that directors having specific industry expertise provide better monitoring of the types of obstacles and governance weaknesses the organisation might encounter. In a report of board expertise at General Motors (*GM*), governance experts considered *GM*'s board to be fairly weak as it lacks directors with auto-industry expertise and includes several retirees without recent corporate-management experience (Lublin & Stoll, 2009). UK board chairs interviewed for a research conducted by Oxford Brookes University's Centre for Diversity Policy Research and Practice also suggested that academic nonexecutive directors could make a valuable contribution in two major areas (Oxford Brookes University's Centre for Diversity Policy Research and Practice, 2016a). They argued that academics are expected to improve board performance in areas where the academic expertise matches the company focus and where they bring university executive leadership to company boards (Oxford Brookes University's Centre for Diversity Policy Research and Practice, 2016b). Moreover, Güner, Malmendier, and Tate (2008) analysed how directors with financial expertise affect corporate decisions and suggested that financial experts exert significant influence, though not necessarily in the interest of shareholders if conflicting interests are neglected. They found that the presence of commercial bankers on boards increases external funding and decreases investment-cash flow sensitivity whereas the presence of investment bankers is associated with

larger bond issues but worse stock and earnings performance after acquisitions as they are acting in the interest of creditors.

However, another group of studies explored the disadvantages of having greater educational and professional background diversity among the board members. Ooi, Hooy, and Mat Som (2015), for example, argued that directors who possess a wide range of backgrounds might provide diverse suggestions and advices that could lead to difficulty in coming to a decisive conclusion during the board meeting. The diversity would further hinder management team ability to operate cohesively due to the vagueness of the suggestions provided. Eulerich, Velte, and van Uum (2014) also hypothesised that higher educational diversity decreases the corporate performance due to the communication and coordination problems that might arise because of the differences in the professional experiences of the board members.

4.3.1.2 The UK context

Boardroom diversity is one of the issues that has attracted increasing interest in recent years in the UK (Mallin, 2019, p. 220; Solomon, 2013, p. 105) . For example, in 2003 the Department of Trade & Industry (*DTI*) invited Dean Laura Tyson of the London Business School to chair a group to determine the different ways with which listed companies can improve their recruitment, selection, and development of non-executive directors (Calder, 2008, p. 44). The resulting report showed that diversity in backgrounds, skills, and experiences of non-executives improves board effectiveness by bringing a wider range of viewpoints and knowledge to bear on issues of company performance in addition to enhancing relationships with corporate stakeholders including customers, employees and shareholders (Tyson, 2003).

In 2010, the UK revised its corporate governance code and included a new principle that requires the board to take into consideration the benefits of diversity when recruiting and appointing new board members (FRC, 2010c). Moreover, the 2014 version of the UK Corporate governance code place more emphasis on board diversity by asserting in its preface that not only gender and race but also experience and approach are important when determining the appropriate balance of skills that are required among board members to ensure effective engagement with key stakeholders (FRC, 2014c). These revisions were retained in the 2016 version of the UK Corporate Governance Code (FRC, 2016c) and in the 2018 version but with similar wording (FRC, 2018b).

4.3.1.3 Previous related empirical studies

Empirically, most related studies focus on the relationship between educational background diversity and firm performance. However, the impact of educational diversity among board members on earnings management was rarely discussed. Wellalage and Locke (2013), for example, showed that education and occupational diversity has a negative impact on firm financial performance for a sample of companies listed on Colombo Stock Exchange (*CSE*). Regarding, earnings management, Li, Tseng, and Chen (2016), investigated the effect of top management team (*TMT*) expertise on *REM* activities and found that education level and core functional expertise are negatively related to *REM*, while accounting proficiency is positively associated with earnings manipulation through real activities. They contended that little research has been conducted on the associations among *TMT* characteristics (e.g. expertise) and earnings management and that issue merits further exploration.

4.3.1.4 Educational and professional background diversity hypothesis

Based on agency theory prediction that higher board diversity results in an increased boardroom independence and better monitoring of managers (Carter et al., 2008; Gallego-Álvarez, García-Sánchez, & Rodríguez-Dominguez, 2010), a proposition can be suggested that diverse board with varied educational and professional backgrounds may entail better monitoring of management and mitigate earnings management. It is also predicted that diverse board with varied educational and professional backgrounds, such as marketing, accounting and finance, law, and production engineering tend to be more effective in mitigating real activates earnings management than accrual-based earnings management due to the varied real activities that can be employed to manipulate earnings. Thus, it is hypothesized that:

H1: There is a negative relationship between professional experience diversity and earnings management.

4.3.2 Gender Diversity

4.3.2.1 Conceptual and theoretical background

Gender literature in sociology, psychology and management suggested that males and females have different characteristics that impact their work life behaviour (Vähämaa, 2014). Srinidhi, Gul, and Tsui (2011) argued that female directors, who are exposed to different experiences than males due to different socialization processes, are expected to enrich board discussions and improve its decisions. Post and Byron (2015, p. 1548) also contended that increased representation of female directors on boards may influence both what information is brought to bear in decision-making and how decisions are made because female and male directors differ in their “cognitive frames

– that is, their information-seeking and information-evaluation processes." McInerney-Lacombe, Bilimoria, and Salipante (2008) argued that female directors are more likely to discuss tough issues in the boardroom, compared to their male counterparts, and that their unique backgrounds, skills and attitudes may result in their willingness to raise issues that may be uncomfortable or tension-inducing for board members. Female directors also tend to stimulate more participative communication among board members and exert a positive influence on its effectiveness and governance (Bear et al., 2010; Joy, 2008).

In addition to their impact on the decision-making process, differences in gender characteristics have also been noted in risk-taking behaviour (Gull, Nekhili, Nagati, & Chtioui, 2018). Females exhibit more trustworthiness, less overconfidence, greater risk aversion and more ethical behaviour in their professional life than their male counterparts do (Barber & Odean, 2001; Betz, O'Connell, & Shepard, 1989; Byrnes, Miller, & Schafer, 1999; Heminway, 2007). Given these traits, gender differences in board can influence the quality of financial reporting (Peni & Vähämaa, 2010). Ho, Li, Tam, and Zhang (2015) argued that female leadership contributes to a better internal control environment with a stronger emphasis on conservative and ethical financial reporting due to the conservative mind-set of females and that they are more likely to report incidents of fraudulent financial reporting than males (Kaplan, Pany, Samuels, & Zhang, 2009). In addition, Adams and Ferreira (2009) showed that female directors exhibited greater diligence in monitoring by promoting higher board attendance, joining more monitoring committees, such as audit and corporate governance committees, and demanding greater accountability for managers' poor performance.

4.3.2.2 The UK context

After 2010, the issue of females' underrepresentation on corporate boards has risen to the top of policy agendas in the UK (Doldor, 2017). In this context, the UK government invited Lord Davies in 2010 to lead a review to identify the obstacles preventing more females from reaching the boardroom and to provide recommendations concerning what the government and the business could do to raise the percentage of females on corporate boards (Davies, 2011). Lord Davies showed in his report, "Women on Boards", that females made up only 12.5 percent of the directors of the corporate boards of *FTSE* 100 listed companies (Davies, 2011). He also made a number of recommendations to increase females' proportion on corporate boards. Successive annual reviews were conducted and reports were issued in 2012, 2013, 2014, and then in 2015 (Davies, 2012, 2013, 2014, 2015). The final report, issued in October 2015, indicated that females representation on *FTSE 100* corporate boards has more than doubled since 2011 and reached 26.1% and *FTSE 350* corporate boards have 21.9% of females in October 2015 (Davies, 2015).

In 2016, the UK government asked Sir Hampton to chair an independent review to continue the work of Lord Davies, "Women on Boards Review", with the aim of improving further the number of females in senior leadership positions and on the boards of *FTSE 350* companies (Hampton-Alexander Review, 2016). The review issued a series of annual reports in 2016, 2017 and 2018 (Hampton-Alexander Review, 2016, 2017, 2018). The latest report shows that females represent 26.7% of *FTSE 350* corporate boards at the first of October 2018 and recommends all stakeholders to take an action to increase that proportion to reach 33% by 2020 (Hampton-Alexander Review, 2018).

4.3.2.3 Previous related empirical studies

Scholars have examined the effects of female directors on the firm' financial performance and market value. Erhardt et al. (2003) used a sample of large US companies and found that the percentage of women and minorities on boards of directors is positively associated with profitability. They argued that female directors help foster competitive advantage by dealing effectively with diversity in labour and product markets. Campbell and Mínguez-Vera (2008), Carter et al. (2008), and Carter et al. (2003) also documented a positive relationship between gender diversity firm's value and financial performance measure by Tobin's q respectively. Other scholars, however, suggested that gender diversity does not necessarily improve firm performance. Wolfers (2006) used data on Standard & Poor's (*S&P*) 1500 firms over the period 1992–2004 and found no systematic differences in stock returns for firms headed by female or male *CEO*s. Rose (2007) used Danish data and reported no significant association between firm performance and female board representation. Rose (2007) justified her results by arguing that board members with an unconventional background are socialised unconsciously adopting the ideas of the majority of conventional board members and thus minimising the potential effects of women on the board.

Regarding earnings management, few studies have examined the association between gender diversity on the board of directors and earnings management (Arun, Almahrog, & Ali Aribi, 2015). For instance, Barua, Davidson, Rama, and Thiruvadi (2010) and Peni and Vähämaa (2010) examined the effects of executives' gender on earnings management. Barua et al. (2010) showed that companies with female *CFOs* have lower performance-matched absolute discretionary accruals while Peni and Vähämaa (2010) found that firms with female *CFOs* are associated with income-

decreasing discretionary accruals, thereby implying that female *CFOs* are following more conservative financial reporting strategies. However, Peni and Vähämaa (2010) found no significant impact of *CEO* gender on accrual earnings management. Vähämaa (2014) also reported that discretionary accruals tend to become more negative for a three-year sample of the Standard & Poor's (*S&P*) 1500 firms when a female replaces a male *CFO*. Similarly, Srinidhi et al. (2011) showed that female participation is associated with better board monitoring by being less likely to opportunistically manage earnings through the use of accruals. Meanwhile, Lakhal, Aguir, Lakhal, and Malek (2015) suggested that females are considered as a crucial corporate governance device due to their effectiveness on their monitoring role evidenced by their research results showing that the proportion of females on the board standing as a director or a chair reduces accruals earnings management. Arun et al. (2015) indicated that female directors tend to be more effective on their monitoring role in low-debt firms as they are more likely to be more conservative and engage in income-decreasing accrual earnings management. Kyaw, Olugbode, and Petracci (2015) suggested that female directors could bring benefits to their firms on condition that the workplace environment empowers them as their findings revealed that a gender diverse board mitigates accrual-based earnings management in countries where gender equality is high.

4.3.2.4 Gender diversity hypothesis

Based on the agency theory prediction and literature results that gender diversity improves the board monitoring function of managers and could lead to better earnings management detection, it is predicted that firms with gender-diverse boards experience less earnings manipulation through both accruals and real activities. It is also predicted

that female directors tend to be more effective in mitigating real earnings management than accrual earnings management as females have been observed to be less assertive in several financial settings (Ho et al., 2015). Females are inclined to feel less competent than males do in financial matters and in finance area in general (Barber & Odean, 2001; Prince, 1993), a competency which is basically required for detecting the management of firm earrings. Therefore, it is hypothesized that:

H2: There is a negative relationship between gender diversity and earnings management.

4.4 Data and Methodology

The current study is conducted using data obtained from the annual reports of UK–listed companies in the years 2010–2014. The initial sample comprises all companies that constitute the Financial Times Stock Exchange (*FTSE*) 350 Index. Financial companies (ICB 8000:8999) and regulated utilities (ICB 7000:7999) companies are excluded from the initial sample due to their special accounting practices and accordingly different accruals processes and to the differences in their incentives and opportunities to manage earnings (Peasnell et al., 2005). Mining (ICB 1750:1779) companies are also excluded as they are subject to statutory requirements of specific accounting treatments for particular transactions and events relating to extractive industry operations (Cotter et al., 1998). Following prior research, industries' supersectors with less than six observations per year are then excluded to ensure sufficient data for parameter estimation (Athanasakou et al., 2011; DeFond & Jiambalvo, 1994; Rosner, 2003; Subramanyam, 1996). *Table 4-1* summarizes the preceding procedures for selecting the study's sample.

Table 4-1*: *Sample Selection Procedures

Description	First model: *Professional Background Diversity*						Second model: *Gender Diversity*					
	2010	**2011**	**2012**	**2013**	**2014**	**Pooled**	**2010**	**2011**	**2012**	**2013**	**2014**	**Pooled**
Initial sample (FTSE 350)	350	350	350	350	350	1750	350	350	350	350	350	1750
Excluded:												
Financial, mining and Utilities firms	140	140	140	140	140	700	140	140	140	140	140	700
Industries smaller than 6 firms	12	12	12	12	12	60	12	12	12	12	12	60
Missing data	62	50	43	42	42	239	34	30	29	29	29	153
Final sample	136	148	155	156	156	**751**	164	168	169	168	168	**837**

To examine the selected sample, financial data needed to calculate earnings management and control variables are obtained from the DataStream, FAME and Thomson One Banker. Data on board characteristics are hand collected from the annual reports of the sample firms and other sources like the directors' LinkedIn profiles. The following regression models[1] are employed to examine the hypotheses for the selected sample:

$$DA_{it} = \alpha + \beta_1 PEXPDIV_{it} + \beta_2 BRDIND_{it} + \beta_3 BRDSIZE_{it} + \beta_4 BRDACT_{it} + \beta_5 DUAL_{it} + \beta_6 ROA_{it} + \beta_7 GROWTH_{it} + \beta_8 LEV_{it} + \beta_9 AUDITQ_{it} + \beta_{10} MNGTOWN_{it} + \beta_{11} BLOCK_{it} + \beta_{12} REM_{it} + \varepsilon \quad (4.1.a)$$

$$REM_{it} = \alpha + \beta_1 PEXPDIV_{it} + \beta_2 BRDIND_{it} + \beta_3 BRDSIZE_{it} + \beta_4 BRDACT_{it} + \beta_5 DUAL_{it} + \beta_6 ROA_{it} + \beta_7 GROWTH_{it} + \beta_8 LEV_{it} + \beta_9 AUDITQ_{it} + \beta_{10} MNGTOWN_{it} + \beta_{11} BLOCK_{it} + \beta_{12} DA_{it} + \varepsilon \quad (4.1.b)$$

$$DA_{it} = \alpha + \beta_1 GENDIV_{it} + \beta_2 BRDIND_{it} + \beta_3 BRDSIZE_{it} + \beta_4 BRDACT_{it} + \beta_5 DUAL_{it} + \beta_6 ROA_{it} + \beta_7 GROWTH_{it} + \beta_8 LEV_{it} + \beta_9 AUDITQ_{it} + \beta_{10} MNGTOWN_{it} + \beta_{11} BLOCK_{it} + \beta_{12} REM_{it} + \varepsilon \quad (4.2.a)$$

[1] See Appendix A for variables definitions.

$$REM_{it} = \alpha + GENDIV_{it} + \beta_2 BRDIND_{it} + \beta_3 BRDSIZE_{it} + \beta_4 BRDACT_{it} + \beta_5 DUAL_{it} + \beta_6 ROA_{it} + \beta_7 GROWTH_{it} + \beta_8 LEV_{it} + \beta_9 AUDITQ_{it} + \beta_{10} MNGTOWN_{it} + \beta_{11} BLOCK_{it} + \beta_{12} DA_{it} + \varepsilon \quad (4.2.b)$$

Where:

4.4.1 Dependent variables

4.4.1.1 Accrual earnings management variable

This study employs the cross-sectional version of the performance-adjusted (Kothari et al., 2005) model to measure *AEM*[1] as this model mitigates misspecification when used for detecting earnings management for samples of extreme performance (Dechow et al., 2012; Keung & Shih, 2014) like this study's sample[2].

4.4.1.2 Real earnings management variables

The current study considers three types of *REM* activities: sales manipulation, overproduction, cutting discretionary expenditures including research and development (*R&D*) and selling, general, and administrative (*SG&A*) expenditures. The models developed and used by Roychowdhury (2006) and Zang (2012) are employed in the current paper to measure *REM*[3].

4.4.2 Independent Variables Measurement

The following section provides detailed information about the measurement of the two independent variables.

4.4.2.1 Professional Experience Diversity

Professional experience diversity separates directors into seven groups according to their professional experiences and backgrounds. These groups are accounting and

[1] See Appendix A for *AEM* measurement and variables definitions.
[2] *Table 3-2* shows the sample descriptive statistics.
[3] See Appendix A for *REM* measurement and variables definitions.

finance; economics and business backgrounds; production, engineering and natural sciences; political science, legal and government; medical and dental, military; and social science backgrounds.

The present study uses the Blau (1977) index to measure professional experience diversity, which is measured as $1 - \sum_{k=1}^{n} p_k^2$, where p_k is the percentage of board members in kth category and n is the total number of board members. It is the most commonly used measure of diversity to capture variations in categorical data (Campbell & Mínguez-Vera, 2008, p. 442; Harrison & Klein, 2007a, p. 1211; Harrison & Sin, 2006, p. 206; Miller & Triana, 2009, p. 766; Pitts, 2005, p. 619; Wellalage & Locke, 2013, p. 126). Miller and Triana (2009, p. 766) suggested that Blau index is an ideal measure of diversity because it meets the criteria set for effective diversity measures: it has a zero point to represent complete homogeneity or no diversity, larger numerical values means greater diversity, it has no negative values as negative diversity is meaningless, and finally, the index is not unbounded (Harrison & Sin, 2006, pp. 210-211).

4.4.2.2 Gender Diversity

Literature employed multiple proxies to examine the impact of gender diversity specifically on firm performance. Rose (2007), for example, employed a dummy variable that equals to one if there is at least one woman on the board and zero otherwise in addition to the proportion of women on the board to examine the influence of board female directors on firm performance in Denmark. The present study uses the proportion of women on the board as it takes into account the evenness (balance) of the distribution of board members between the gender categories.

4.4.3 Control Variables

In addition to the independent variables discussed above, a number of variables related

to other characteristics of the board, firm characteristics, audit quality and ownership structure are included in the current study to control their impact on the governance or earnings management process. This study includes board independence measured by the percentage of independent directors; *CEO* duality measured using a dummy variable that takes the value of "1" if the roles of chairman and *CEO* are combined and "0" otherwise; the number of board meetings as a proxy for board activity; and the number of board members as a measure of board size. Moreover, the current study controlled the effect of firm characteristics by including firm performance, firm growth, and financial leverage control variables measured by return on assets (Habbash, 2013), the proportion of the market value of firm's equity to its book value of equity at the end of the year (Abdul Rahman & Ali, 2006; Dimitropoulos & Asteriou, 2010), and the ratio of total long-term debt to total assets (Bartov et al., 2000) respectively. The effect of the quality of the audit performed is also controlled. Similar to Balsam et al. (2003), Dunn and Mayhew (2004) and Niu (2006), the present study uses auditor industry specialization to proxy for audit quality. It is measured by the total number of firms in any industry audited by specific auditor divided by the total number of firms in that industry for the year (Mayhew & Wilkins, 2003). Finally, two variables are included to control the effect of the ownership structure: managerial ownership, measured as the total number of shares held by executive directors divided by the total number of shares outstanding (Habbash, 2013; Larcker & Richardson, 2004); and ownership concentration, which is calculated as an indicator variable taking the value of one if the firm has an outside shareholder owning 10% or more of the outstanding shares, and zero otherwise (Peasnell et al., 2005).

4.5 Main Results

4.5.1 Descriptive statistics

Descriptive statistics for the explanatory variables for the two models are reported in *Table 4-2*. It shows that the average value for professional background diversity is slightly higher than 0.60, with fairly small standard deviation (0.1), suggesting that the firms included in the sample may be somewhat consistent in the directors' professional diversity. For gender diversity, *Table 4-2* shows that the maximum value is 50% with a minimum value of zero, which indicates some listed firms' boards are homogenous in gender. Moreover, the average proportion of females on the board is 14%. It is higher than the figures reported by previous research for a sample of UK firms in 2011 (Liao et al., 2015). A recent study conducted by Arun et al. (2015) indicated that the proportion of female directors setting on the board in *FTSE* 350 companies roughly doubled over the period from 2005 to 2011, rising from 6.5% to 12.4%. The increase in the number of females sitting on the board may be attributed to the increased attention paid to board diversity in the UK Corporate Governance Code since 2010 and thus more companies complying with the code recommendations by having more females on the board (FRC, 2010c, 2012).

Regarding earnings management variables, *DA* as a proxy for *AEM* has an approximate mean value of 0.05, which is comparable with the findings of prior research such as 0.06 for a sample of *FTSE* companies with fiscal year ended on March 2007 (Sun et al., 2010). The average value for *REM* is -0.01. It differs from the figure reported by Garcia Osma (2008) of 0.35 for a sample of 3,438 observations of UK firms as Garcia Osma (2008) examined only one real activity for managing earnings, *R&D* cutting, while the current study takes into consideration different activities.

Table 4-2*: *Descriptive Statistics

Variable	Mean	Median	Min	MAX	SD	Skewness	Kurtosis
PEXPDIV	0.625	0.642	0.245	0.821	0.091	-0.796	3.668
GENDIV	14.409	14.290	0.000	50.000	10.122	0.244	2.645
BRDIND	61.491	62.500	0.000	88.890	12.388	-0.760	4.553
BRDSIZE	8.986	9.000	4.000	17.000	2.334	0.918	3.895
BRDACTV	8.985	9.000	2.000	27.000	2.773	1.737	9.386
DUAL	0.030	0.000	0.000	1.000	0.172	5.466	30.878
ROA	0.118	0.096	-0.618	3.161	0.201	10.544	146.163
GROWTH	4.916	2.647	-112.216	895.232	34.350	21.303	537.859
LEV	0.179	0.162	0.000	1.001	0.155	0.829	3.787
AUDITQ	37.013	33.330	3.330	100.000	17.535	1.273	5.656
MNGTOWN	0.032	0.002	0.000	0.715	0.104	4.235	21.428
BLOCK	0.548	1.000	0.000	1.000	0.498	-0.193	1.037
DA	0.047	0.032	0.000	0.776	0.062	5.845	56.166
REM	-0.013	0.040	-3.624	2.056	0.488	-1.320	11.094

Variable definitions:
PEXPDIV = The value of Blau index that represents educational and professional background diversity on the board.
GENDIV = The proportion of women on the board.
BRDIND = The number of independent directors divided by the total number of directors on the board.
BRDSIZE = The number of directors on the board.
BRDACTV = The number of board meetings per year.
DUAL = A dummy variable that takes the value of "1" if the roles of chairman and CEO are combined and "0" otherwise.
ROA = The ratio of earnings before interest and taxes to total assets.
GROWTH = The market value of firm's equity divided by the book value of equity at the end of the year.
LEV = The ratio of total long–term debt to total assets.
AUDITQ = The total number of firms in any industry audited by specific auditor divided by the total number of firms in that industry for the year.
MNGTOWN = The total number of shares held by executive directors divided by the total number of shares outstanding.
BLOCK = A dummy variable that takes the value of 1 if the firm has an outside shareholder owning 10% or more of the outstanding shares, and 0 otherwise.
DA = Accruals-based earnings management.
REM = Real activities earnings management.

The correlation matrix for all variables used in the two types of diversity models is presented in *Table 4-3*. From the correlation analysis, a significant positive association between professional background and gender diversity is observed, suggesting that that companies which sought to enhance board diversity have given consideration to both professional background and gender. A significant positive correlation between

the proportion of independent directors and both professional background and gender diversity is also detected, implying that companies improve board diversity through recruiting independent directors with diverse professional background and independent female directors. Furthermore, board size is significantly and positively correlated to both professional background and gender indicating that larger boards are needed to accommodate a diverse board.

In general, the correlation matrix shows no potential multicollinearity issue among variables as none of the variables correlates above 80% (Hair et al., 2010). The highest coefficient is 72% between *ROA* and *GROWTH*. This result was expected and documented in previous research (Al-Zyoud, 2012). In order to further investigate whether these larger correlations may indicate the problem of multicollinearity, the current study calculates the variance inflation factor (*VIF*) and the results show low values implying no multicollinearity issue exists in the two regression models[1].

[1] Results are reported in *Table 4-4*.

Table 4-3: Correlation Matrix

	PEXPDIV	***GENDIV***	***BRDIND***	***BRDSIZE***	***BRDACTV***	***DUAL***	***ROA***	***GROWTH***	***LEV***	***AUDITQ***	***MNGTOWN***	***BLOCK***	***DA***	***REM***
PEXPDIV	1													
GENDIV	0.100***	1												
BRDIND	0.261***	0.365***	1											
BRDSIZE	0.214***	0.206***	0.117***	1										
BRDACTV	0.003	-0.110***	-0.015	-0.080**	1									
DUAL	-0.068*	-0.047	-0.150***	0.098***	0.063*	1								
ROA	-0.043	0.034	-0.002	-0.048	-0.039	0.056	1							
GROWTH	0.023	0.067*	0.021	0.006	-0.007	-0.025	0.723***	1						
LEV	0.108***	0.135***	0.078**	0.138***	-0.068**	-0.069**	-0.146***	-0.069**	1					
AUDITQ	0.088**	0.059*	0.121***	0.194***	-0.071**	0.150***	-0.047	-0.033	-0.060*	1				
MNGTOWN	0.190***	-0.075**	-0.168***	-0.115***	0.007	0.141***	0.047	-0.003	-0.210***	0.036	1			
BLOCK	-0.114***	-0.140***	-0.204***	-0.111***	0.004	0.065*	-0.097***	-0.042	-0.047	-0.041	0.219***	1		
DA	-0.090**	-0.062*	-0.143***	-0.039	0.074**	0.068**	0.040	0.012	-0.12***	0.007	0.183***	0.110***	1	
REM	0.085**	-0.078**	-0.101***	0.028	0.011	-0.135***	-0.165***	-0.066*	0.133***	0.087**	-0.032	0.056	-0.11***	1

* denotes significance at the 0.1 level, ** denote significance at the 0.05 level, and *** denote significance at the 0.01 level.

Variable definitions:

PEXPDIV = The value of Blau index that represents educational and professional background diversity on the board.
GENDIV = The proportion of women on the board.
BRDIND = The number of independent directors divided by the total number of directors on the board.
BRDSIZE = The number of directors on the board.
BRDACTV = The number of board meetings per year.
DUAL = A dummy variable that takes the value of "1" if the roles of chairman and CEO are combined and "0" otherwise.
ROA = The ratio of earnings before interest and taxes to total assets.
GROWTH = The market value of firm's equity divided by the book value of equity at the end of the year.
LEV = The ratio of total long–term debt to total assets.
AUDITQ = The total number of firms in any industry audited by specific auditor divided by the total number of firms in that industry for the year.
MNGTOWN = The total number of shares held by executive directors divided by the total number of shares outstanding.
BLOCK = A dummy variable that takes the value of 1 if the firm has an outside shareholder owning 10% or more of the outstanding shares, and 0 otherwise.
DA = Accruals-based earnings management.
REM = Real activities earnings management.

Table 4-4*: *VIF Test Results

	***AEM* model**				***REM* model**			
Variable	**VIF**	**SQRT VIF**	**Tolerance**	**R-Squared**	**VIF**	**SQRT VIF**	**Tolerance**	**R-Squared**
PEXPDIV	1.150	1.070	0.871	0.129	1.140	1.070	0.878	0.122
GENDIV	1.240	1.120	0.804	0.196	1.240	1.110	0.806	0.194
BRDIND	1.340	1.160	0.748	0.252	1.350	1.160	0.743	0.257
BRDSIZE	1.180	1.080	0.851	0.149	1.170	1.080	0.853	0.148
BRDACTV	1.050	1.020	0.954	0.046	1.050	1.020	0.956	0.045
DUAL	1.130	1.060	0.884	0.116	1.100	1.050	0.907	0.093
ROA	2.330	1.530	0.429	0.571	2.330	1.530	0.429	0.571
GROWTH	2.230	1.490	0.448	0.552	2.250	1.500	0.444	0.556
LEV	1.120	1.060	0.893	0.107	1.110	1.050	0.900	0.100
AUDITQ	1.130	1.060	0.885	0.115	1.110	1.060	0.898	0.102
MNGTOWN	1.190	1.090	0.843	0.157	1.210	1.100	0.828	0.172
BLOCK	1.150	1.070	0.872	0.128	1.150	1.070	0.873	0.127
REM	1.110	1.060	0.898	0.102				
DA					1.080	1.040	0.924	0.076
Mean *VIF*			1.33		**Mean *VIF***		1.33	

Variable definitions:
PEXPDIV = The value of Blau index that represents educational and professional background diversity on the board.
GENDIV = The proportion of women on the board.
BRDIND = The number of independent directors divided by the total number of directors on the board.
BRDSIZE = The number of directors on the board.
BRDACTV = The number of board meetings per year.
DUAL = A dummy variable that takes the value of "1" if the roles of chairman and CEO are combined and "0" otherwise.
ROA = The ratio of earnings before interest and taxes to total assets.
GROWTH = The market value of firm's equity divided by the book value of equity at the end of the year.
LEV = The ratio of total long–term debt to total assets.
AUDITQ = The total number of firms in any industry audited by specific auditor divided by the total number of firms in that industry for the year.
MNGTOWN = The total number of shares held by executive directors divided by the total number of shares outstanding.
BLOCK = A dummy variable that takes the value of 1 if the firm has an outside shareholder owning 10% or more of the outstanding shares, and 0 otherwise.
DA = Accruals-based earnings management.
REM = Real activities earnings management.

4.5.2 Multivariate regression

The statistical procedures employed in chapter three are used in the current study to determine the appropriate regression analysis (random or fixed effects). Table 4-5 reports the results for heteroscedasticity and autocorrelation tests for all models. All *p*-values are significant, indicating that all study models suffer from heteroscedasticity and serial correlation issues. Accordingly, clustered standard errors (Rogers standard errors) are estimated to correct for both heteroscedasticity and serial correlation problems in all models.

Table 4-5: Diversity Models Heteroscedasticity and Autocorrelation Tests' Results

	1st model		***2nd model***	
	AEM	***REM***	***AEM***	***REM***
Modified Wald test for groupwise Heteroscedasticity	chi^2 = 1.6e+36 *p*-value = 0.000	chi^2 = 2.1e+34 *p*-value =0.000	chi^2 = 6.8e+30 *p*-value = 0.000	chi^2 = 8.8e+07 *p*-value = 0.000
Wooldridge test for Autocorrelation in panel data	*F* = 10.276 *p*-value = 0.002	*F* = 23.314 *p*-value =0.000	*F* = 3.933 *p*-value = 0.049	*F* = 19.838 *p*-value = 0.000

4.5.2.1 Results and Discussion of Professional Background Diversity

The first model (4.1.a) examines the association between board professional experience diversity (*PEXPDIV*) and *AEM*. Based on the statistical analysis shown in the first column of *Table 4-6*, the overall adjusted R^2 is 9.08%, a value that is higher than that of 7.6% reported in the first study that excludes *PEXPDIV*[1], which implies that including *PEXPDIV* in the regression model adds some incremental value in explaining the changes in the dependent variable, although the insignificant result reported for model 3.1.a *PEXPDIV* coefficient.

The board professional experience diversity (*PEXPDIV*) coefficient (β = -0.000) is negative and statistically insignificant and accordingly this finding does not

[1] See regression results reported in *Table 3-7*.

support the first hypothesis and the agency theorists' argument that more board diversity leads to increased boardroom independence and, thus, better monitoring of managers. Monitoring and mitigating *AEM* requires directors with accounting and finance competence. Most corporate governance codes encourage the creation of board committees with specific strategic-led mandates (Mahadeo, Soobaroyen, & Hanuman, 2012). For instance, the Disclosure Guidance and Transparency Rules issued by the Financial Conduct Authority (FCA, 2018) requires that at least one member of the audit committee must have competence in accounting and/or auditing, which implies that the board of directors should have members with accounting and finance competence. Diversifying the board by hiring directors with experiences in addition to the required accounting and finance one might have insignificant role in mitigating *AEM*.

Model 4.1.b examines the association between board professional experience diversity (*PEXPDIV*) and *REM*. *Table 4-6* reports in its second column the regression results for this model. The *F*-statistic for the model is significant and the overall adjusted-R^2 is 7%.

The first hypothesis of this study predicts that board professional experience diversity (*PEXPDIV*) is negatively associated with *REM*. The positively signed coefficient ($\beta = 0.341$) on *PEXPDIV* rejects that hypothesis and thus rejects the agency theory prediction on which the hypothesis was based, suggesting that promoting professional experience diversity among the board could lead to increased manipulation of the company earnings through real activities. Multivariate results indicate that boards with a higher mix of professional backgrounds are less effective in performing their monitoring function. Directors with business expertise (e.g. accounting, finance, marketing etc.) may be more sensitive to the firm activities

adjusted by executives with the aim of earnings manipulation. However, diversifying expertise by hiring directors with additional professional backgrounds to the business background may lead to a decreased board sensitivity to *REM* as it might lead to board's indecisiveness that results in slower reactions to signals of earnings manipulation[1]. To overcome this negative implication, it can be suggested that directors with limited business background have a business qualification that would provide them with the knowledge and skills required to assess the financial health of their businesses, question the financial information provided by top management, and to detect the different ways employed by executives to manage their companies' earnings.

Regarding control variables, *BRDACTV*, *ROA*, *GROWTH*, *LEV*, and *MNGTOWN* are insignificantly associated with earnings management. These findings are consistent with the results reported by Abdul Rahman and Ali (2006) and Peasnell et al. (2005) respectively. However, board independence (*BRDIND*) is negatively associated with *AEM*. *REM* is also negatively related to *AEM* indicating that, consistent with Zang (2012) results, firms are likely to substitute between the two earnings management methods. On the other hand *BLOCK* is positively related to *AEM* showing that blockholders may intervene in the firm's management and induce managers to report favourable financial performance in order to maximise their private benefits (Zhong et al., 2007). Concerning their impact on *REM*, *DUAL* and *BRDSIZE* are negatively associated with *REM* while *AUDITQ* has a positive relationship with *REM* which is consistent with Chi et al. (2011) findings.

[1] The robustness of this finding was checked by employing an additional regression model using a binary variable as an explanatory variable for the impact of the presence of non-business directors on *REM* and results show a positive association between the presence of non-business directors and *REM*.

Table 4-6*: *Panel Data Regression Results

	1st model		*2nd model*	
	AEM	***REM***	***AEM***	***REM***
PEXPDIV	-0.000 (-0.01)	0.341* (1.65)		
GENDIV			-0.000 (-0.17)	-0.001 (-1.01)
BRDIND	-0.001* (-1.92)	-0.003 (-1.52)	-0.001** (-1.99)	-0.002 (-1.45)
BRDSIZE	0.000 (0.25)	-0.018* (-1.77)	0.001 (0.52)	-0.014* (-1.66)
BRDACTV	0.001 (1.13)	0.010 (1.38)	0.002 (1.56)	0.009 (1.27)
DUAL	0.026 (1.14)	-0.230* (-1.98)	0.005 (0.19)	-0.228** (-2.03)
ROA	0.017 (0.36)	-0.201 (-1.00)	0.010 (0.21)	-0.249 (-1.27)
GROWTH	-0.000 (-0.13)	-0.00 (-0.29)	-0.000 (-0.03)	-0.000 (-0.09)
LEV	-0.022 (-1.34)	0.068 (0.48)	-0.028* (-1.79)	0.109 (0.83)
AUDITQ	0.000 (0.54)	0.002* (1.77)	0.000 (0.41)	0.003* (1.91)
MNGTOWN	0.060 (0.97)	0.230 (0.86)	0.080 (1.37)	0.267 (0.91)
BLOCK	0.008* (1.66)	0.006 (0.23)	0.008 (1.58)	-0.015 (-0.59)
REM	-0.018* (-1.78)		-0.016** (-1.75)	
DA		-0.667 (-1.22)		-0.507 (-1.21)
Constant	0.067*** (3.08)	-0.061 (-0.34)	0.055*** (2.71)	0.124 (1.06)
Adjusted-R^2	**9.08%**	**6.92%**	**7.55%**	**6.92%**

*, **, and *** denote significance at the 10%, 5%, and 1% levels respectively.
Robust *t*-statistics (*z*-statistics) appear in parentheses.

Variable definitions:
PEXPDIV = The value of Blau index that represents educational and professional background diversity on the board.
GENDIV = The proportion of women on the board.
BRDIND = The number of independent directors divided by the total number of directors on the board.
BRDSIZE = The number of directors on the board.
BRDACTV = The number of board meetings per year.
DUAL = A dummy variable that takes the value of "1" if the roles of chairman and CEO are combined and "0" otherwise.
ROA = The ratio of earnings before interest and taxes to total assets.
GROWTH = The market value of firm's equity divided by the book value of equity at the end of the year.
LEV = The ratio of total long–term debt to total assets.
AUDITQ = The total number of firms in any industry audited by specific auditor divided by the total number of firms in that industry for the year.
MNGTOWN = The total number of shares held by executive directors divided by the total number of shares outstanding.
BLOCK = A dummy variable that takes the value of 1 if the firm has an outside shareholder owning 10% or more of the outstanding shares, and 0 otherwise.
DA = Accruals-based earnings management.
REM = Real activities earnings management.

4.5.2.2 Results and Discussion of Gender Diversity

Models (4.2.a) and (4.2.b) examine the association between board gender diversity (*GENDIV*) and earnings management. The third column of *Table 4-6* reports the

regression results for model (4.2.a). It shows 7.6% adjusted-R^2 with a significant *F*-statistic for the model. Multivariate regression results do not support the second hypothesis and the agency theorists' argument that females improves the board monitoring function. *GENDIV* coefficient is insignificant (β = -0.000 at *p*-value = 0.866) and this finding is consistent with previous research that documented an insignificant association between gender diversity and *AEM* (Moradi, Salehi, Bighi, & Najari, 2012; Sun, Liu, & Lan, 2011). There are several causes for the observed insignificant result. First, the small proportion of females on the board (on average 14%, equivalent to one female on an average board of nine members), may affect females ability to influence the remainder of the board causing the board to be dominated by male directors' opinions even if female directors have different opinions about earnings management. Another possibility is that females are not uniform in their ability to influence other board members. Individual differences in their influencing capabilities may mask a gender difference in earnings management beliefs and lead to observing the insignificant results (Sun et al., 2011). Finally, appointed females on the board may lack the financial expertise, which is an important attribute needed for effective monitoring of earnings management (Gull et al., 2018; Nekhili & Gatfaoui, 2013; Park & Shin, 2004).

The final regression model (4.2.b) examines the association between board gender diversity (*GENDIV*) and *REM*. Results reported in the fourth column of *Table 4-6* show 7% adjusted-R^2 and an insignificant association (β = -0.001) between the presence of female members on the board and *REM*. The reported result agrees with model (4.2.a) findings and thus does not support the second hypothesis and the agency theorists' prediction as well.

Putting results of the two gender models together shows that females might be ineffective in mitigating earnings management and the most probably cause for the observed results is due to their limited presentation on the board and thus affecting their ability to influence other board members. For females to be effective directors, this study recommends that UK *FTSE 350* listed companies attain the target set by the Hampton-Alexander Review (2017) in relation to women representation on corporate boards.

For control variables, regression results show no major differences from those reported for the first model with exception of *LEV* which has a significant negative association with *AEM* as documented in Park and Shin (2004) who suggest that creditors might intensify the monitoring of highly leveraged firms and hence reduce the opportunities to manipulate earnings.

4.5.3 Endogeneity and two-stage least squares (*2SLS*) regression

The results reported under the main analysis might be subject to the potential endogeneity bias that might be caused by omitted variables, measurement errors, and/or simultaneity (John et al., 2014, p. 94; Lee et al., 2016; Roberts & Whited, 2013, p. 495; Wang, 2015, p. 2579). To address this problem, the current study employs the instrumental variable regression to re-examine the relationship between board diversity and earnings management. The two-stage least squares (*2SLS*) technique is performed and following Barnhart and Rosenstein (1998), Coles et al. (2008), Hermalin and Weisbach (1991), Himmelberg et al. (1999), and McKnight and Weir (2009), the lagged values of the endogenous variables are used as instruments.

To ascertain the validity of the used instruments, diagnostic tests are performed and results for all models are reported in Table 4-7, Table 4-8, Table 4-9, and Table

4-10. Findings show that chosen instruments are relevant (not weak) as *F*-statistics of the first stage regression are above 10, the standard Staiger and Stock (1997) rule of thumb. The Sanderson and Windmeijer (2016) conditional *F*-statistics also exceed Stock and Yogo (2005) critical value of 21.01, implying that any bias from using the chosen instruments is less 5% of the bias from a *OLS* regression, with a 5% level of significance.

Table 4-7: Regressing AEM on PEXPDIV tests for weak instruments

	***F*-statistics (*p*-value)**	***SW F*-statistics**
PEXPDIV	266.24 (0.00)	2007.18
BRDIND	152.00 (0.00)	892.22
BRDSIZE	215.16 (0.00)	1581.10
BRDACTV	27.10 (0.00)	341.48
DUAL	10.54 (0.00)	86.00
ROA	32.35 (0.00)	64.46
LEV	259.75 (0.00)	1544.52
AUDITQ	562.49 (0.00)	2129.67
MNGTOWN	355.19 (0.00)	1706.07
BLOCK	165.79 (0.00)	445.49
REM	42.70 (0.00)	168.25

Variable definitions:
PEXPDIV = The value of Blau index that represents educational and professional background diversity on the board.
BRDIND = The number of independent directors divided by the total number of directors on the board.
BRDSIZE = The number of directors on the board.
BRDACTV = The number of board meetings per year.
DUAL = A dummy variable that takes the value of "1" if the roles of chairman and CEO are combined and "0" otherwise.
ROA = The ratio of earnings before interest and taxes to total assets.
LEV = The ratio of total long–term debt to total assets.
AUDITQ = The total number of firms in any industry audited by specific auditor divided by the total number of firms in that industry for the year.
MNGTOWN = The total number of shares held by executive directors divided by the total number of shares outstanding.
BLOCK = A dummy variable that takes the value of 1 if the firm has an outside shareholder owning 10% or more of the outstanding shares, and 0 otherwise.
REM = Real activities earnings management.

Table 4-8: Regressing REM on PEXPDIV tests for weak instruments

	***F*-statistics (*p*-value)**	***SW F*-statistics**
PEXPDIV	233.92 (0.00)	1396.85
BRDIND	94.76 (0.00)	547.53
BRDSIZE	148.12 (0.00)	1021.99
BRDACTV	15.75 (0.00)	153.09
ROA	10.31 (0.00)	49.22
LEV	200.91 (0.00)	1077.78
AUDITQ	506.05 (0.00)	3486.75
MNGTOWN	492.34 (0.00)	1796.08
BLOCK	80.92 (0.00)	268.45

Variable definitions:
PEXPDIV = The value of Blau index that represents educational and professional background diversity on the board.
BRDIND = The number of independent directors divided by the total number of directors on the board.
BRDSIZE = The number of directors on the board.
BRDACTV = The number of board meetings per year.
ROA = The ratio of earnings before interest and taxes to total assets.
LEV = The ratio of total long–term debt to total assets.
AUDITQ = The total number of firms in any industry audited by specific auditor divided by the total number of firms in that industry for the year.
MNGTOWN = The total number of shares held by executive directors divided by the total number of shares outstanding.
BLOCK = A dummy variable that takes the value of 1 if the firm has an outside shareholder owning 10% or more of the outstanding shares, and 0 otherwise.

Table 4-9: Regressing AEM on Gender tests for weak instruments

	***F*-statistics (*p*-value)**	***SW F*-statistics**
GENDIV	209.16 (0.00)	674.42
BRDIND	97.86 (0.00)	344.76
BRDSIZE	123.10 (0.00)	1056.68
BRDACTV	18.33 (0.00)	165.77
ROA	18.52 (0.00)	42.05
LEV	215.6 (0.00)	1363.18
AUDITQ	432.76 (0.00)	3009.03
MNGTOWN	278.59 (0.00)	1904.10
BLOCK	66.10 (0.00)	271.97
REM	20.31 (0.00)	84.80

Variable definitions:
GENDIV = The proportion of women on the board.
BRDIND = The number of independent directors divided by the total number of directors on the board.
BRDSIZE = The number of directors on the board.
BRDACTV = The number of board meetings per year.
ROA = The ratio of earnings before interest and taxes to total assets.
LEV = The ratio of total long–term debt to total assets.
AUDITQ = The total number of firms in any industry audited by specific auditor divided by the total number of firms in that industry for the year.
MNGTOWN = The total number of shares held by executive directors divided by the total number of shares outstanding.
BLOCK = A dummy variable that takes the value of 1 if the firm has an outside shareholder owning 10% or more of the outstanding shares, and 0 otherwise.
REM = Real activities earnings management.

Table 4-10: Regressing REM on Gender tests for weak instruments

	***F*-statistics (*p*-value)**	***SW F*-statistics**
GENDIV	80.04 (0.00)	126.97
BRDIND	34.05 (0.00)	71.69
BRDSIZE	25.36 (0.00)	119.62
LEV	42.13 (0.00)	186.28
AUDITQ	50.23 (0.00)	353.15
MNGTOWN	256.72 (0.00)	537.46
BLOCK	13.28 (0.00)	46.48

Variable definitions:
GENDIV = The proportion of women on the board.
BRDIND = The number of independent directors divided by the total number of directors on the board.
BRDSIZE = The number of directors on the board.
LEV = The ratio of total long–term debt to total assets.
AUDITQ = The total number of firms in any industry audited by specific auditor divided by the total number of firms in that industry for the year.
MNGTOWN = The total number of shares held by executive directors divided by the total number of shares outstanding.
BLOCK = A dummy variable that takes the value of 1 if the firm has an outside shareholder owning 10% or more of the outstanding shares, and 0 otherwise.

Results of the second-stage regression for all models are presented in *Table 4-11*. They show that gender diversity (*GENDIV*) continues to have no significant impact on earnings management. They also show that board professional experience diversity (*PEXPDIV*) is still positive and significantly associated with *REM* while it continues to have no significant impact on *AEM*. Overall, the main results are robust after controlling for the endogeneity problem.

Table 4-11: *2SLS Results*

	1st model		*2nd model*	
	AEM	***REM***	***AEM***	***REM***
PEXPDIV	-0.003 (-0.08)	0.553* (1.65)		
GENDIV			0.000 (0.24)	0.002 (0.7)
BRDIND	-0.001** (-2.12)	-0.010*** (-2.62)	-0.001* (-1.84)	-0.011* (-1.87)
BRDSIZE	-0.002 (-1.34)	0.005 (0.36)	-0.001 (-0.44)	0.011 (0.68)
BRDACTV	0.001 (0.55)	-0.004 (-0.26)	0.002 (0.75)	0.013 (1.36)
DUAL	0.030 (0.99)	-0.399** (-2.17)	0.018 (0.69)	-0.245* (-1.67)
ROA	-0.008 (-0.4)	-0.498 (-1.08)	-0.023 (-0.72)	-0.193 (-0.76)
GROWTH	0.000 (0.77)	0.001 (0.54)	0.000 (0.96)	-0.000 (-0.2)
LEV	-0.024 (-1.21)	0.327 (1.32)	-0.037* (-1.67)	0.057 (0.24)
AUDITQ	0.000 (0.54)	0.003** (2.06)	-0.000 (-0.05)	0.003** (1.96)
MNGTOWN	-0.006 (-0.21)	-0.153 (-0.55)	0.022 (0.64)	0.049 (0.16)
BLOCK	0.013** (2.1)	0.057 (0.66)	0.016* (1.9)	-0.022 (-0.19)
REM	-0.006 (-0.9)		-0.007 (-0.94)	
DA		-0.705 (-1.12)		-0.792 (-1.41)
Constant	0.078** (2.33)	0.1112119 (0.29)	0.076** (2.09)	0.338 (0.94)
Adjusted-R^2	**5.82%**	**10.47%**	**4.98%**	**5.99%**

*, **, and *** denote significance at the 10%, 5%, and 1% levels respectively.
Robust *t*-statistics (*z*-statistics) appear in parentheses.

Variable definitions:

PEXPDIV = The value of Blau index that represents educational and professional background diversity on the board.
GENDIV = The proportion of women on the board.
BRDIND = The number of independent directors divided by the total number of directors on the board.
BRDSIZE = The number of directors on the board.
BRDACTV = The number of board meetings per year.
DUAL = A dummy variable that takes the value of "1" if the roles of chairman and CEO are combined and "0" otherwise.
ROA = The ratio of earnings before interest and taxes to total assets.
GROWTH = The market value of firm's equity divided by the book value of equity at the end of the year.
LEV = The ratio of total long–term debt to total assets.
AUDITQ = The total number of firms in any industry audited by specific auditor divided by the total number of firms in that industry for the year.
MNGTOWN = The total number of shares held by executive directors divided by the total number of shares outstanding.
BLOCK = A dummy variable that takes the value of 1 if the firm has an outside shareholder owning 10% or more of the outstanding shares, and 0 otherwise.
DA = Accruals-based earnings management.
REM = Real activities earnings management.

4.6 Conclusion

This chapter extends the previous study through examining whether increasing the size of the board through hiring directors with varied expertise is effective in performing the monitoring function. In particular, it analyses the impact of promoting professional experience diversity and social diversity among corporate boards on their effectiveness in mitigating earnings management for a sample of UK firms from 2010 through 2014. Empirical results show that board professional experience diversity is positively associated with *REM* while it is insignificantly associated with *AEM*. No significant association is also found between gender diversity and earnings management measures. Overall, although promoting diversity among board members might have positive impacts such as demonstrating an absence of discrimination, results show that it might have negative impacts on the board effectiveness in performing its monitoring function. To overcome professional experience negative implications affecting the board monitoring function, this study suggests that directors with limited business background should have a business qualification that would provide them with the knowledge and skills required to evaluate the financial health of their companies, question the financial information provided by the management, and to detect the different ways employed by managers to manipulate their companies' earnings. For gender diversity to be effective in mitigating earnings management, this study recommends also that UK *FTSE 350* listed companies achieve the target set by the Hampton-Alexander Review (2017) in relation to the female representation on corporate boards.

Due to the specific nature of family businesses, the next Chapter 4 investigates whether the effectiveness of promoting diversity among the board of directors in mitigating earnings management holds in family-controlled firms.

Chapter 5: Board Diversity and Earnings Management in Family-Controlled Firms

5.1 Introduction

Family businesses are prevalent and play a substantial role in the global economy (Alderson, 2012; Poza & Daugherty, 2014; Prencipe, Bar-Yosef, & Dekker, 2014). They account for two thirds of all businesses around the world, generate 70%-90% of the annual global GPD, and create between 50 per cent and 80 per cent of jobs in the majority of countries worldwide (FFI, 2018). In the United Kingdom, they are considered the backbone of the economy (IFB, 2018; IFB Research Foundation and Oxford Economics, 2018). They represent two thirds of UK businesses, employ 12.2 million people and generate 26.5% of the total UK GDP (IFB Research Foundation and Oxford Economics, 2018). Indeed, family businesses account for 87.6 per cent of all UK private sector firms, and represent 47.2 per cent and 10.9 per cent of medium-sized firms and large firms respectively (IFB Research Foundation and Oxford Economics, 2018).

Despite the long-lasting prevalence of family firms worldwide, academic research has turned its attention towards family businesses only in the recent decades (Benavides-Velasco, Quintana-García, & Guzmán-Parra, 2013; Prencipe et al., 2014). Research on accounting in family business, specifically, still appears to be emerging (Ferramosca & Ghio, 2018, p. 2; Paiva et al., 2016; Prencipe et al., 2014). Although it has been steadily growing during the last few years, there is still a multitude of gaps and research areas to be uncovered (Prencipe et al., 2014). Moreover, Salvato and Moores (2010) pointed out that accounting practices in family firms display unique features as distinct from those in non-family firms; nonetheless, they have received relatively little attention from scholars (Paiva, Lourenço, & Dias Curto, 2018). García-

Ramos, Díaz-Díaz, and García-Olalla (2017) pointed out that corporate governance needs are also different in family businesses compared to non-family businesses.

Family firms adopts different governance practices due to the unique issues associated with family ownership (Alderson, 2012; Bennedsen et al., 2010). First, family firms are more likely to maximise firm value rather than shareholder value because they hold undiversified portfolio relative to non-family firms' shareholders (Yu-Thompson, Lu-Andrews, & Fu, 2016). Consequently, family firms suffer less severe agency problems between principals and agents as their managers are either family members or closely monitored by the family controlling shareholders (Chrisman, Chua, Le Breton-Miller, Miller, & Steier, 2018). Second, family firms represent a large group of undiversified shareholders who are more conservative in their investment decisions than well-diversified shareholders. That undiversified and concentrated ownership might lead to a more severe Type II agency problem between controlling and non-controlling shareholders (Chrisman et al., 2018). Finally, family firms are more concerned with the firm's reputation and long-term survival. They are motivated by and committed to the preservation of a set of non-economic affect-related values (socio-emotional wealth), which may cause variations in the governance mechanisms employed (Prencipe et al., 2014). These distinctive features of family firms are likely to impinge upon the reporting behaviour and the accounting practices, including earnings management, employed by that type of companies (Paiva et al., 2016).

Based on a theoretical framework that combines the agency theory and socioemotional wealth theory, the current study investigates the effectiveness of one of the governance mechanisms, which is board diversity, in mitigating earnings management in family firms. The empirical study is based on a set of UK-listed family

firms comprising 196 firm-year observations during the period from 2010 to 2017.

Findings show that board professional background diversity is positively related to *AEM* while it is insignificantly related to *REM*. In addition, Gender diversity is insignificantly related to earnings management (both *AEM* and *REM*). In general, results show that although promoting diversity among board members might have positive impacts such as demonstrating an absence of discrimination as documented in literature, it might also have negative implications related to the board effectiveness in performing its monitoring and oversight function.

This study contributes to the literature in several ways. First, it adds to the governance literature by investigating the impact of diversifying the board of directors, as a way of improving its monitoring function, on the level of earnings management in family firms. It also distinguishes between observable and non-observable attributes of diversity through considering two diversity variables capturing the professional background and social diversity. Second, research on real earnings management (*REM*) in family firms has received only little attention (Ferramosca & Ghio, 2018, p. 123; Tian et al., 2018). Most of the earnings management studies of family firms considers only accrual-based earnings management (Razzaque, Ali, & Mather, 2016). Hence, this study contributes to the scant literature of earnings management in family firms by considering the impact of diversity on both accrual-based and real earnings management. Finally, the results of this study have practical implications particularly pertinent for family business owners, their advisors and corporate governance regulatory bodies. The presented results provide an overview of the relationship between the diversity of the board of directors and earnings management of publicly listed family firms.

The remainder of the chapter is organised as follows. Section 2 provides the

theoretical frameworks that have been employed by prior research of family businesses in the areas of corporate governance. Section 3 reviews the related literature and presents the study hypotheses. Section 4 discusses the data and the empirical methodology. Section 5 shows the main results, and finally section 6 offers conclusions.

5.2 Theoretical Framework

Different theoretical frameworks have been employed by prior research of family businesses in the areas of corporate governance and management: stewardship theory, the resource-based view (*RBV*) of the firm, agency theory, and socioemotional wealth (*SEW*) theory (Prencipe et al., 2014). The agency and socioemotional wealth (*SEW*) theories are discussed in detail below as both of them consider the risk of pursuing opportunistic behaviours by managers, which is related to the main objective of the current thesis, whereas the stewardship and *RBV* theories view managers as stewards that enhance the business resources, which is irrelevant to the thesis main theme.

The first theory that has been employed in family business research is the agency theory. It generally argues that, due to the greater involvement of family shareholders in management and greater awareness of the family of managers' actions, these firms are exposed to lower conflict of interests between owners and managers, known as Type-I agency or principal–agent conflicts (Ali, Chen, & Radhakrishnan, 2007). However, the reduced Type-I agency conflicts in family firms may give rise to a conflict between controlling family owners and non-controlling members (Type-II agency or principal– principal conflicts) as the firm managers may act for the controlling family, but not for shareholders in general, and the dominant family owner

may extract the firm's wealth to the detriment of minority shareholders (Villalonga & Amit, 2006). One limitation of the agency theory is that it focuses only on agency relationships in the family business, while ignores the noneconomic factors (e.g. emotional attachment of the family to the business and the desire of the family to preserve the business in the long term) that drive family firms' business decisions (Prencipe et al., 2014).

Another framework applied in the field of family business is provided by socioemotional wealth (*SEW*) theory (Gómez-Mejía, Haynes, Núñez-Nickel, Jacobson, & Moyano-Fuentes, 2007). The *SEW* theory argues that family members considers the firm as a long-term family investment to be maintained for future generations (Berrone, Cruz, & Gomez-Mejia, 2012). It suggests that family owners are 'loss averse' with respect to *SEW*. In other words, they will embrace risky decisions that preserve *SEW* even if they are expected to decrease economic wealth. In the meantime, they will avoid risky decisions that might increase economic wealth but reduce *SEW* (Gomez-Mejia, Cruz, & Imperatore, 2014). The desire to safeguard socioemotional wealth may lead to positive outcomes such as proactive engagement in social actions towards stakeholders (Cennamo, Berrone, Cruz, & Gomez–Mejia, 2012), through using part of the firm resources for social purposes, e.g., donations to schools, universities and charities (Ferramosca & Ghio, 2018, p. 112). However, it could also encourage family owners to pursue self-serving behaviours at the expense of other shareholders (Kellermanns, Eddleston, & Zellweger, 2012).

This study relies on both the agency and socioemotional wealth theories in examining the impact of promoting diversity among board members on mitigating earnings management. The first considers economic factors as elements that may drive principals' decisions, while the latter considers the non-economic factors such as

identification of the family with the firm, desire to exercise authority and to retain influence and control within the firm, and preservation of family firm social capital and the family dynasty (Berrone et al., 2012; Prencipe et al., 2014).

As family owners or managers may pursue opportunistic behaviours at the expense of non-controlling shareholders, the board of directors is suggested to be one of the key monitoring mechanisms to control principal–principal agency costs (Chrisman, Kellermanns, Chan, & Liano, 2010). Chrisman et al. (2010) argue that the ability of boards to control those costs would be enhanced owing to their greater ability to focus on the principal–principal agency problem due to the lower principal–manager agency costs in family firms. Durnev and Kim (2005) and Gomez-Mejia, Cruz, Berrone, and Castro (2011) contend that controlling shareholders might increase their firms' value by hiring a professional board for assuring investors that they have a good governance system in place and, accordingly, will refrain from diversion of the firm's resources. However, some scholars question the true independence of board members nominated and elected by controlling owners (Bennedsen et al., 2010; García-Ramos & García-Olalla, 2011; Rubino, Tenuta, & Cambrea, 2017; Vieira, 2018). García-Ramos and García-Olalla (2011) indicated that although independent directors are not family members, they might have a friendly or contractual relationship with the firm or its founder; thus, board independence would be compromised, and the board monitoring role would not be performed effectively by independents. Ararat et al. (2015) showed a need to consider a broader conceptualization of diversity beyond independence due to the mixed results of empirical research on the effectiveness of the role of independent directors. Therefore, this study considers the impact of both professional background and social diversity on earnings management in family firms.

5.3 Literature Review and Hypotheses Development

5.3.1 Educational and Professional Background Diversity

5.3.1.1 Conceptual and theoretical background

Literature uses the concept of board educational diversity to refer to the varying degrees of knowledge, skills and expertise, which expected to enhance board capability to generate creative solutions to resolve complex problems and issues and provide a broader scope of inputs that help improve strategy formulation and evaluation (Al-Musali & Ismail, 2015; Heyden et al., 2015). Binacci, Peruffo, Oriani, and Minichilli (2016) and Mahadeo et al. (2012) argued that teams with diverse functional backgrounds are more likely to have greater information processing capabilities, flexibility and better ability to adopt new ideas and to accept innovations and to generate more alternatives to creatively solve complex problems. These characteristics should lead to a more board "independence of mind" and better decision-making, and thus a better ability to monitor managers (Carter et al., 2003; Jorissen, Deman, van der Elst, & van der Laan, 2017; Rubino et al., 2017). Anderson et al. (2011) also contended that diverse boards provide a larger number of viewpoints that contributes, among other things, to greater board monitoring effectiveness.

Jorissen et al. (2017) suggested that board occupational background, functional expertise, and educational diversity matter more for family firms than for non-family firms. They used the key agency aspects, proposed by Bammens, Voordeckers, and Van Gils (2011), that are particularly characteristic for family firms and set them apart from their non-family counterparts to indicate the implications of diversifying the board on its effectiveness in performing the monitoring function in family firms. The used agency issues are family's economic and non-economic interests, altruism, and intrafamily divergence of interests. First, concerning family interests, they argued that

diversifying boards should be helpful for family firms as it leads to a more board "independence of mind" and thus a better ability to mitigate not only type-I agency costs but also limit the discretion of a particular stakeholder (type-II agency costs). Accordingly, it can be predicted that diverse boards with varied backgrounds, such as marketing, accounting and finance, law, and production engineering tend to be more effective in mitigating earnings management especially earnings that can be manipulated through varied real activities.

Second, altruism which is a distinctive feature of family firms (Schulze, Lubatkin, & Dino, 2003). Altruism can adversely affect the ability of the firm's owner-manager to exercise self-control (Lubatkin, Schulze, Ling, & Dino, 2005) through entitling family members to benefits that would not be received if they were employed elsewhere such as rewarding employed family members equally, regardless of effort and performance, and lavishing them with excessive perquisites and privileges (Schulze, Lubatkin, Dino, & Buchholtz, 2001). Such decisions, although well intentioned, may incite employed family members to misbehave by engaging in shirking and free-riding (Schulze et al., 2003; Schulze et al., 2001). Therefore, altruism may compromise the principal's ability to realistically assess and monitor employed family members performance (Siebels & zu Knyphausen-Aufseß, 2012). It can be argued that diverse boards with varied backgrounds should be able to assess and monitor the performance of family members employed in different positions in the firm and, accordingly, and set limits on family agents' altruistic tendencies to safeguard the interests of not only non-controlling owners, but also of the owning-family itself.

The final agency issue is the intrafamily divergence of interests. In multigenerational firms, family members in these firms are more likely to have

diverging strategic views and preferences compared to relatives in first generation firms (Bammens & Voordeckers, 2009; Voordeckers, Van Gils, & Van den Heuvel, 2007). Literature shows that the need for control by the board can be expected to increase to ensure that the best interests of the firm and the extended owning-family are being served (Bammens & Voordeckers, 2009; Bammens et al., 2011). As a result, it can be expected that boards with varied backgrounds should be able to monitor family agents by ensuring that these agents act in line with the varied interests and preferences of the members of the extended owner-family.

5.3.1.2 Educational and professional background diversity hypothesis

Based on the discussion presented in the previous subsection and following agency theory prediction that higher board diversity results in an increased boardroom independence and better monitoring of managers (Carter et al., 2008; Gallego-Álvarez et al., 2010), a proposition can be suggested that diverse board with varied educational and professional backgrounds may mitigate both accrual-based and real earnings management. Thus, it is hypothesized that:

H1: There is a negative relationship between professional experience diversity and earnings management in family firms.

5.3.2 Gender Diversity

5.3.2.1 Conceptual and theoretical background and previous related studies

Recently, many legislative initiatives have been issued with the aim of increasing the number of female members on the board (e.g. Hampton-Alexander Review, 2017). Consequently, the issue of the board gender diversity has become an area of research by several scholars addressing the impact of the presence of women on the board on

its effectiveness in performing its functions. Rhode and Packel (2014), for example, indicated that the female presence on boards of directors can improve monitoring functions as gender diversity may lessen the tendency for boards to engage in groupthink and diverse groups are less likely to take extreme positions and more likely to engage in higher-quality analysis. Adams and Ferreira (2009) also argued that female directors exhibited greater diligence in monitoring by promoting higher board attendance, joining more monitoring committees (e.g. audit and corporate governance committees), and demanding greater accountability for managers' poor performance.

Concerning the role of women in family businesses, some scholars contended that women have less effective role in performing the monitoring function than in non-family firms (Abdullah & Ismail, 2016; Ismail & Abdullah, 2013). Rubino et al. (2017) argued that the criteria used to choose women as board members in family firms are likely to be different from those in non-family and that management skills, knowledge and experience may not be the main decision criteria (Rodríguez-Ariza, Cuadrado-Ballesteros, Martínez-Ferrero, & García-Sánchez, 2017). Literature showed that family firms are typically risk-averse and, accordingly, are more likely to nominate board members (including females) from amongst family members that might be more dependent on the top management of the firms and thus less effective in discharging their monitoring roles (Abdullah & Ismail, 2016; Abdullah, Ismail, & Nachum, 2016). Abdullah and Ismail (2016) also indicated that in family firms, parties responsible for nominating directors place some restrictions on the pool of potential candidates, which in the case of women is already typically small resulting in a greater likelihood of nominating less qualified females. Finally, the variety of views, ideas and networks that gender diversity brings to the board are likely to be of lesser value in family firms where the need to maintain family relationships and unity is crucial for the family's

survival and hence gender diversity may diminish the board effectiveness in performing the monitoring function (Abdullah & Ismail, 2016; Rubino et al., 2017).

However, Rubino et al. (2017) argued that if the women are not family members and are chosen based on merit, professional expertise, and qualifications, they may represent new human capital and could bring new perspectives to the family business, helping to increase the efficiency of the board.

5.3.2.2 Gender diversity hypothesis

Based on agency theory prediction that higher board gender diversity results in an increased boardroom independence and better monitoring of managers (Carter et al., 2008) and that females are hired based on merit, it is predicted that family firms with gender-diverse boards experience less earnings manipulation through both accruals and real activities. Therefore, it is hypothesized that:

H2: There is a negative relationship between gender diversity and earnings management in family firms.

5.4 Data and Methodology

The empirical study examines panel data for family firms listed on the London Stock Exchange (*LSE*) over eight-year period from 2010 to 2017[1]. This study applies the European criteria to identify family firms. *"Listed companies meet the definition of family enterprise if the person who established or acquired the firm (share capital) or their families or descendants possess 25 per cent of the decision-making rights mandated by their share capital"* (European Commission, 2009, p. 4). Financial

[1] Although the analysis covers family firms' data from 2010 to 2017, the financial data for all firms listed on *LSE* from 2009 to 2017 were collected to compute the earnings management measures.

companies (ICB 8000:8999), regulated utilities (ICB 7000:7999), and Mining (ICB 1750:1779) companies are excluded from the initial sample due to their special accounting practices (Cotter et al., 1998; Peasnell et al., 2005). Based on these criteria, 196 firm-year observations for family firms listed on the *LSE* were identified. The procedures for selecting the study's sample are summarised in *Table 5-1*. Financial reporting data are obtained from the DataStream, FAME and Thomson One Banker. Data on board characteristics are hand collected from the annual reports of the sample firms and other sources like the directors' LinkedIn profiles.

***Table 5-1*: Sample Selection Procedures**

	First model: *Educational and Professional Background Diversity*									**Second model: *Gender Diversity***								
Description	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**Pooled**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**Pooled**
Initial sample (*FTSE All Shares*)	634	634	634	634	634	634	634	634	5072	634	634	634	634	634	634	634	634	5072
Excluded: Firms with less than 25% or no family ownership	585	585	585	585	585	585	585	585	4680	585	585	585	585	585	585	585	585	4680
Financial, mining and Utilities firms	17	17	17	17	17	17	17	17	136	17	17	17	17	17	17	17	17	136
Missing data	14	12	11	10	8	4	1	0	60	13	12	11	10	8	4	0	0	58
Final sample	18	20	21	22	24	28	31	32	**196**	19	20	21	22	24	28	32	32	**198**

The following regression models[1] are employed to examine the hypotheses for the selected sample:

$$DA_{it} = \alpha + \beta_1 PEXPDIV_{it} + \beta_2 BRDIND_{it} + \beta_3 BRDSIZE_{it} + \beta_4 BRDACT_{it} + \beta_5 DUAL_{it} + \beta_6 ROA_{it} + \beta_7 GROWTH_{it} + \beta_8 LEV_{it} + \beta_9 AUDITQ_{it} + \beta_{10} MNGTOWN_{it} + \beta_{11} FIRMSIZE_{it} + \beta_{12} REM_{it} + \varepsilon \quad (5.1.a)$$

$$REM_{it} = \alpha + \beta_1 PEXPDIV_{it} + \beta_2 BRDIND_{it} + \beta_3 BRDSIZE_{it} + \beta_4 BRDACT_{it} + \beta_5 DUAL_{it} + \beta_6 ROA_{it} + \beta_7 GROWTH_{it} + \beta_8 LEV_{it} + \beta_9 AUDITQ_{it} + \beta_{10} MNGTOWN_{it} + \beta_{11} FIRMSIZE_{it} + \beta_{12} DA_{it} + \varepsilon \quad (5.1.b)$$

$$DA_{it} = \alpha + \beta_1 GENDIV_{it} + \beta_2 BRDIND_{it} + \beta_3 BRDSIZE_{it} + \beta_4 BRDACT_{it} + \beta_5 DUAL_{it} + \beta_6 ROA_{it} + \beta_7 GROWTH_{it} + \beta_8 LEV_{it} + \beta_9 AUDITQ_{it} + \beta_{10} MNGTOWN_{it} + \beta_{11} FIRMSIZE_{it} + \beta_{12} REM_{it} + \varepsilon \quad (5.2.a)$$

[1] See Appendix B for variables definitions.

$$REM_{it} = \alpha + GENDIV_{it} + \beta_2 BRDIND_{it} + \beta_3 BRDSIZE_{it} + \beta_4 BRDACT_{it} + \beta_5 DUAL_{it} + \beta_6 ROA_{it} + \beta_7 GROWTH_{it} + \beta_8 LEV_{it} + \beta_9 AUDITQ_{it} + \beta_{10} MNGTOWN_{it} + \beta_{11} FIRMSIZE_{it} + \beta_{12} DA_{it} + \varepsilon \quad (5.2.b)$$

Where:

5.4.1 Dependent variables

5.4.1.1 Accrual earnings management variable

This research employs the cross-sectional version of the performance-adjusted (Kothari et al., 2005) model to measure *AEM*[1] as this model mitigates misspecification when used for detecting earnings management for samples of extreme performance (Dechow et al., 2012) like this study's sample.

5.4.1.2 Real earnings management variables

The models developed and used by Roychowdhury (2006) and Zang (2012) are employed in the current research to measure *REM*[2], which is a comprehensive measure that combines three types of *REM* activities: sales manipulation, overproduction, cutting discretionary expenditures including both research and development (*R&D*) and selling, general, and administrative (*SG&A*) expenditures.

5.4.2 Independent Variables Measurement

The following section provides detailed information about the measurement of the two independent variables.

[1] See Appendix B for *AEM* measurement and variables definitions.
[2] See Appendix B for *REM* measurement and variables definitions.

5.4.2.1 Professional Experience Diversity

Blau (1977) index is used to measure professional experience diversity, which is measured as $1 - \sum_{k=1}^{n} p_k^2$, where p_k is the percentage of board members in k^{th} category and n is the total number of board members. It is the most commonly used measure of diversity to capture variations in categorical data (Campbell & Mínguez-Vera, 2008, p. 442; Harrison & Klein, 2007a, p. 1211; Harrison & Sin, 2006, p. 206; Miller & Triana, 2009, p. 766; Pitts, 2005, p. 619; Wellalage & Locke, 2013, p. 126).

5.4.2.2 Gender Diversity

The proportion of women on the board is used as a proxy for gender diversity as it takes into account the evenness (balance) of the distribution of board members between the gender categories.

5.4.3 Control Variables

In addition to the used independent variables, a number of variables related to other characteristics of the board, firm characteristics, audit quality and managerial ownership are included in the current study to control their impact on the governance or earnings management process. This study includes board independence measured by the percentage of independent directors; *CEO* duality measured using a binary variable that takes the value of "1" if the roles of chairman and *CEO* are combined and "0" otherwise; the number of board meetings as a proxy for board activity; and the numbers of members of the board of directors as a measure of board size. Moreover, the current study controlled the effect of firm characteristics by including firm performance, firm growth, financial leverage, and firm size variables measured by return on assets (Habbash, 2013), the proportion of the market value of firm's equity to its book value of equity at the end of the year (Abdul Rahman & Ali, 2006;

Dimitropoulos & Asteriou, 2010), the ratio of total long-term debt to total assets (Bartov et al., 2000), and the natural logarithm of total assets at the end of the year (Abdul Rahman & Ali, 2006; Chen & Zhang, 2014; González & García-Meca, 2014) respectively. The effect of the audit quality performed is also controlled. Similar to Balsam et al. (2003), Dunn and Mayhew (2004) and Niu (2006), the current research uses auditor industry specialization as a proxy for audit quality. It is measured by the total number of companies in any industry audited by specific auditor divided by the total number of companies in that industry during the year (Mayhew & Wilkins, 2003). Finally, the effect of managerial ownership is controlled, which is measured by the total number of shares held by executive directors divided by the total number of shares outstanding (Habbash, 2013; Larcker & Richardson, 2004).

5.5 Main Results

5.5.1 Descriptive statistics

Table 5-2 reports descriptive statistics of the sample data. It shows that the mean value of professional background diversity is slightly lower than 0.60 with fairly small standard deviation (0.1), suggesting that the firms included in the sample may be somewhat consistent in the directors' professional diversity. For gender diversity, *Table 5-2* shows that the maximum value is 44.44% with a minimum value of zero, indicating that some listed firms' boards are homogenous in gender. Moreover, the mean proportion of females on the board is 16%. It is higher than the figure of 14.4% reported in the second study for a sample of typical *FTSE 350* UK listed firms. The difference in proportion of females sitting on the board may be attributed to the smaller board size on average in family firms compared to typical *FTSE 350* listed firms. On average, a family firm board is constituted of eight members, whereas a typical *FTSE*

350 listed firm boards average nine members[1].

Table 5-2: Descriptive Statistics

Variable	Mean	Median	Min	MAX	SD	Skewness	Kurtosis
PEXPDIV	0.581	0.611	0.000	0.766	0.144	-1.571	6.593
GENDIV	16.297	15.480	0.000	44.440	11.681	0.383	2.680
BRDIND	48.754	50.000	0.000	83.330	17.366	-0.821	3.943
BRDSIZE	8.039	8.000	3.000	17.000	2.538	0.920	4.032
BRDACTV	8.781	8.000	1.000	26.000	3.642	1.234	6.497
DUAL	0.054	0.000	0.000	1.000	0.227	3.939	16.512
ROA	0.128	0.106	-0.430	0.947	0.130	1.520	12.026
GROWTH	4.011	2.963	-13.096	22.780	4.074	1.433	8.240
LEV	0.198	0.106	0.000	1.609	0.253	2.153	9.833
AUDITQ	31.538	28.940	2.130	80.000	15.820	0.662	3.531
MNGTOWN	0.175	0.012	0.000	0.715	0.219	0.793	2.119
FIRMSIZE	20.166	19.997	17.018	24.264	1.307	0.504	3.388
DA	0.005	0.010	-0.410	0.675	0.085	1.647	22.483
REM	-0.146	-0.082	-2.364	1.618	0.516	-0.686	4.786

Variable definitions:
PEXPDIV = The value of Blau index that represents educational and professional background diversity on the board.
GENDIV = The proportion of women on the board.
BRDIND = The number of independent directors divided by the total number of directors on the board.
BRDSIZE = The number of directors on the board.
BRDACTV = The number of board meetings per year.
DUAL = A dummy variable that takes the value of "1" if the roles of chairman and CEO are combined and "0" otherwise.
ROA = The ratio of earnings before interest and taxes to total assets.
GROWTH = The market value of firm's equity divided by the book value of equity at the end of the year.
LEV = The ratio of total long–term debt to total assets.
AUDITQ = The total number of firms in any industry audited by specific auditor divided by the total number of firms in that industry for the year.
MNGTOWN = The total number of shares held by executive directors divided by the total number of shares outstanding.
FIRMSIZE = The natural logarithm of total assets at the end of the year
DA = Accruals-based earnings management.
REM = Real activities earnings management.

Table 5-2 shows also that family controlled businesses have more involvement in income-decreasing real earnings management when compared to *FTSE 350* listed companies, as the mean values of *REM* for family firms is -0.15 whereas for *FTSE 350* firms is -0.01262. The reported result agrees with the socioemotional wealth (*SEW*) framework assumption that family firms tend to preserve their long-term value by reporting lower earnings and accordingly they would generate hidden reserves which

[1] See *Table 4-2* of the second study.

would leave the firm in a healthier situation for the following family generations (Achleitner et al., 2014; Ferramosca & Ghio, 2018, p. 112). Finally, *Table 5-2* reports a mean value of 0.005 for accrual-based earnings management (*DA*).

Table 5-3 shows the correlations of the coefficients for all variables used in the current study. It shows a significant positive association between professional background and gender diversity suggesting that that companies that aimed at enhancing board diversity have given consideration to both professional background and gender. A significant positive correlation between the proportion of independent directors on the board and gender diversity is also detected, implying that firms improve the diversity of the board through recruiting independent female directors. Furthermore, board size is significantly and positively correlated to professional background diversity. This correlation is expected as a larger board is needed to accommodate more board members with diverse backgrounds. Finally, the association between diversity variables (*PEXPDIV* and *GENDIV)* and earnings management (*DA* and *REM*) is positive and significant. However, these are preliminary results, and conclusions can only be drawn after controlling for other factors that might affect earnings manipulation.

In general, the correlation matrix shows no potential multicollinearity issue among variables as none of the variables correlates above 80% (Hair et al., 2010). The highest coefficient is 46% between *FIRMSIZE* and *BRDSIZE*. This result was expected and documented in previous research (Boone, Casares Field, Karpoff, & Raheja, 2007). None of the variance inflation factors (*VIF*)[1] exceeds 10, which supports the idea that the independent variables do not suffer from any multicollinearity issue (Gujarati & Porter, 2009; Hair et al., 2010).

[1] Results are reported in *Table 5-4*.

Table 5-3: Correlation Matrix

	PEXPDIV	***GENDIV***	***BRDIND***	***BRDSIZE***	***BRDACTV***	***DUAL***	***ROA***	***GROWTH***	***LEV***	***AUDITQ***	***MNGTOWN***	***FIRMSIZE***	***DA***	***REM***
PEXPDIV	1													
GENDIV	0.127*	1												
BRDIND	-0.044	0.317***	1											
BRDSIZE	0.209***	0.022	-0.019	1										
BRDACTV	-0.218***	-0.244***	0.057	-0.069	1									
DUAL	-0.245***	-0.098	-0.111	0.129*	0.190***	1								
ROA	-0.149**	-0.045	0.036	0.042	0.031	0.210***	1							
GROWTH	0.059	-0.050	0.061	0.416***	0.004	0.124*	0.349***	1						
LEV	0.235**	0.219**	0.086	0.440***	-0.036	-0.264***	-0.309***	0.100	1					
AUDITQ	0.183**	-0.208***	-0.228***	0.219***	0.054	0.164**	0.146**	0.122*	-0.138*	1				
MNGTOWN	-0.185***	-0.210***	-0.097	-0.063	0.256***	0.258***	0.194***	0.244***	-0.364**	0.137*	1			
FIRMSIZE	0.323***	0.368***	0.348***	0.462***	-0.186***	-0.078	-0.167**	0.072	0.500**	-0.168**	-0.308***	1		
DA	0.238***	0.130*	-0.083	-0.053	0.047	-0.008	-0.136*	-0.348***	0.113	-0.071	0.019	0.057	1	
REM	0.152**	0.198***	-0.164**	-0.044	-0.002	-0.138*	-0.505***	-0.358***	0.222***	-0.058	-0.081	0.061	0.417***	1

* denotes significance at the 0.1 level, ** denote significance at the 0.05 level, and *** denote significance at the 0.01 level.

Variable definitions:

PEXPDIV = The value of Blau index that represents educational and professional background diversity on the board.
GENDIV = The proportion of women on the board.
BRDIND = The number of independent directors divided by the total number of directors on the board.
BRDSIZE = The number of directors on the board.
BRDACTV = The number of board meetings per year.
DUAL = A dummy variable that takes the value of "1" if the roles of chairman and CEO are combined and "0" otherwise.
ROA = The ratio of earnings before interest and taxes to total assets.
GROWTH = The market value of firm's equity divided by the book value of equity at the end of the year.
LEV = The ratio of total long–term debt to total assets.
AUDITQ = The total number of firms in any industry audited by specific auditor divided by the total number of firms in that industry for the year.
MNGTOWN = The total number of shares held by executive directors divided by the total number of shares outstanding.
FIRMSIZE = The natural logarithm of total assets at the end of the year
DA = Accruals-based earnings management.
REM = Real activities earnings management.

Table 5-4: VIF Test Results

	***AEM* model**				***REM* model**			
Variable	**VIF**	**SQRT VIF**	**Tolerance**	**R-Squared**	**VIF**	**SQRT VIF**	**Tolerance**	**R-Squared**
PEXPDIV	1.330	1.150	0.751	0.249	1.440	1.200	0.693	0.307
GENDIV	1.650	1.280	0.607	0.393	1.450	1.200	0.690	0.310
BRDIND	1.430	1.200	0.697	0.303	1.440	1.200	0.695	0.305
BRDSIZE	2.350	1.530	0.426	0.574	2.370	1.540	0.422	0.578
BRDACTV	1.290	1.140	0.773	0.227	1.270	1.130	0.787	0.213
DUAL	1.280	1.130	0.781	0.219	1.210	1.100	0.826	0.174
ROA	1.680	1.300	0.596	0.405	1.220	1.100	0.821	0.179
GROWTH	1.380	1.170	0.725	0.275	1.540	1.240	0.652	0.349
LEV	1.670	1.290	0.598	0.402	1.670	1.290	0.601	0.400
AUDITQ	1.350	1.160	0.740	0.260	1.410	1.190	0.709	0.291
MNGTOWN	1.400	1.180	0.717	0.283	1.460	1.210	0.687	0.313
FIRMSIZE	2.200	1.480	0.455	0.545	2.200	1.480	0.455	0.545
REM	1.690	1.300	0.593	0.407				
DA					1.350	1.160	0.742	0.258
Mean *VIF*			1.59		**Mean *VIF***		1.54	

Variable definitions:
PEXPDIV = The value of Blau index that represents educational and professional background diversity on the board.
GENDIV = The proportion of women on the board.
BRDIND = The number of independent directors divided by the total number of directors on the board.
BRDSIZE = The number of directors on the board.
BRDACTV = The number of board meetings per year.
DUAL = A dummy variable that takes the value of "1" if the roles of chairman and CEO are combined and "0" otherwise.
ROA = The ratio of earnings before interest and taxes to total assets.
GROWTH = The market value of firm's equity divided by the book value of equity at the end of the year.
LEV = The ratio of total long–term debt to total assets.
AUDITQ = The total number of firms in any industry audited by specific auditor divided by the total number of firms in that industry for the year.
MNGTOWN = The total number of shares held by executive directors divided by the total number of shares outstanding.
FIRMSIZE = The natural logarithm of total assets at the end of the year
DA = Accruals-based earnings management.
REM = Real activities earnings management.

5.5.2 Multivariate regression

To determine an appropriate regression analysis, this study follows the same statistical procedures employed in the first two studies[1]. Results for heteroscedasticity and autocorrelation tests are reported in Table 5-5. They show that all model have heteroscedasticity and autocorrelation issues and, therefore, clustered standard errors (Rogers standard errors) are estimated to correct for these issues.

Table 5-5: Family firms-Diversity Models Heteroscedasticity and Autocorrelation Tests' Results

	1st model		***2nd model***	
	AEM	***REM***	***AEM***	***REM***
Modified Wald test for groupwise Heteroscedasticity	chi^2 = 5.0e+33 *p*-value = 0.000	chi^2 = 1.6e+33 *p*-value =0.000	chi^2 = 2.1e+32 *p*-value = 0. 000	chi^2 = 7.1e+31 *p*-value = 0. 000
Wooldridge test for Autocorrelation in panel data	*F* = 7.194 *p*-value = 0.012	*F* = 24.382 *p*-value =0.000	*F* = 10.472 *p*-value = 0.003	*F* = 23.445 *p*-value = 0. 000

5.5.2.1 Results and Discussion of Professional Background Diversity

The first model (*5.1.a*) analyses the relationship between board professional experience diversity (*PEXPDIV*) and *AEM*. Results are reported in the first column in *Table 5-6* and show a significant *F*-statistic with an adjusted R^2 of 33.67%. The board professional experience diversity (*PEXPDIV*) coefficient (β = 0.12) is positive and statistically significant suggesting that promoting professional experience diversity among the board is associated with income-increasing manipulation of the company accruals. This result contradicts the first hypothesis and the agency theorists' argument that greater board diversity results in an increased boardroom independence and enhanced oversight of managers (Carter et al., 2008; Gallego-Álvarez et al., 2010). The board of directors should comprise members with recent and relevant financial

[1] These procedures are discussed in detail in chapter three.

experience needed to perform the monitoring function of *AEM*. Most corporate governance codes encourage the creation of a body or bodies with specific strategic-led mandates (Mahadeo et al., 2012). For example, the UK corporate governance code (FRC, 2018b) requires that listed companies' boards should establish an audit committee of independent non-executive directors with at least one member having a recent and relevant financial experience, which implies that the board of directors should have at least one member with finance competence. Diversifying the board in terms of the professional experience means hiring directors with experiences other than the financial one, which might lead to a decreased board sensitivity to *AEM* and increased board's indecisiveness that results in slower reactions to signals of earnings manipulation. This finding suggest that board directors, specially the unaffiliated ones, should have a business qualification that would provide them with the knowledge and skills needed to detect the different activities adopted by family-controlled companies to manipulate reported earnings.

Model (*5.1.b*) analyses the association between board professional experience diversity (*PEXPDIV*) and *REM*. Multivariate results are reported in the second column in *Table 5-6*. The *F*-statistic for the model is significant and the adjusted-R^2 is 25.04%. Reported results do not support the first hypothesis and the agency theory prediction that promoting diversity on the board enhances its independence and oversight of management. *PEXPDIV* coefficient is insignificant suggesting that promoting professional experience diversity among the board might not be an effective mechanism that could be employed to mitigate earnings manipulation through real activities. Consistent with the socioemotional wealth (*SEW*) theory, managers in family firms tends to avoid engaging in income-increasing practices through real activities (i.e. *REM*), as family firms are more concerned about their transgenerational

sustainability and those *REM* practices would negatively affect their future value (Achleitner et al., 2014). Hence, in such a setting, family ownership might be the main determinant for engaging in or avoiding *REM* practices and governance mechanisms such as diversifying the board might not have a significant effect.

5.5.2.2 Results and Discussion of Gender Diversity

Models (*5.2.a*) and (*5.2.b*) examine the relationship between board gender diversity (*GENDIV*) and earnings management. *Table 5-6* reports the regression results for the two models. Multivariate regression results show 28.24% adjusted-R^2 with a significant *F*-statistic for model (*5.2.a*). Results reported in the third column of *Table 5-6* do not support the second hypothesis and indicate that the presence of women on boards does not appear to be crucial in curbing *AEM*. These results do not support also the agency theorists' prediction that gender diversity improves the board oversight function of managers. *GENDIV* coefficient is insignificant and this finding is consistent with previous research that documented an insignificant association between gender diversity and *AEM* (Abdullah & Ismail, 2016; Branciari & Poli, 2017; Ismail & Abdullah, 2013; Poli, 2017). As suggested by Sun et al. (2011) even though women are more ethical than men are, they might not be able to influence the male counterparts regarding earnings management due to the small proportion of females on the board (on average 16%, equivalent to one female on an average board of eight members). Further, appointed females directors may lack the financial expertise, which is an essential attribute needed to detect earnings management (Gull et al., 2018; Nekhili & Gatfaoui, 2013; Park & Shin, 2004).

Model (*5.2.b*) examines the relationship between board gender diversity (*GENDIV*) and *REM*. Results reported in the last column of *Table 5-6* show 23.97% adjusted-R^2 and an insignificant *GENDIV* coefficient. This result also does not support

the second hypothesis and the agency theory prediction on which it is based. Results of the two gender models (*5.2.a*) and (*5.2.b*) indicate that females might not be effective in curbing earnings management and the most probably cause for the observed results is due to their limited presentation on the board and thus affecting their ability to influence other board members. To enhance women ability to influence other board directors, it can be recommended that family-controlled corporations aim to attain the targets set by the Hampton-Alexander Review (2017) for female representation on corporate boards.

Given that the influence of the presence of female directors on earnings management is insignificant in family firms, and that the influence of the presence of female directors on earnings management in *FTSE 350* listed companies is also insignificant[1], it does not seem to matter whether females sit on the board of family- or non-family-controlled firms; they are not able to influence the practice of earnings management in either context.

[1] See *Table 4-6* of the second study.

Table 5-6: Panel Data Regression Results

	1st model		*2nd model*	
	AEM	***REM***	***AEM***	***REM***
PEXPDIV	0.120***	-0.044		
	(2.74)	(-0.23)		
GENDIV			-0.000	0.006
			(-0.12)	(1.68)
BRDIND	-0.000	-0.000	-0.000	-0.001
	(-1.07)	(-0.32)	(-0.45)	(-0.57)
BRDSIZE	-0.001	-0.008	0.003	-0.013
	(-0.29)	(-0.43)	(0.82)	(-0.86)
BRDACTV	0.001	0.003	0.003	0.006
	(0.63)	(0.55)	(1.34)	(0.97)
DUAL	0.017	0.149	-0.009	0.185
	(0.92)	(0.99)	(-0.32)	(1.4)
ROA	0.126**	-0.754**	0.078	-0.836**
	(2.44)	(-2.12)	(1.28)	(-2.54)
GROWTH	-0.005***	-0.002	-0.003**	0.002
	(-5.63)	(-0.2)	(-2.41)	(0.21)
LEV	0.016	0.046	-0.082	-0.145
	(0.66)	(0.27)	-1.53)	(-0.78)
AUDITQ	-0.001**	-0.002	-0.000	-0.001
	(-2.24)	(-0.99)	(-1.24)	(-0.76)
MNGTOWN	0.019	0.216	-0.009	0.177
	(0.89)	(1.15)	(-0.31)	(0.92)
FIRMSIZE	0.000	-0.016	0.008	-0.062
	(0.1)	(-0.46)	(1.35)	(-1.22)
REM	0.044***		0.061***	
	(5.08)		(3.86)	
DA		0.694**		0.965***
		(2.34)		(3.08)
Constant	-0.041	0.387	-0.161	1.227
	(-0.47)	(0.53)	(-1.45)	(1.25)
Adjusted-R^2	**33.67%**	**25.04%**	**28.24%**	**23.97%**

*, **, and *** denote significance at the 10%, 5%, and 1% levels respectively.
Robust *t*-statistics (*z*-statistics) appear in parentheses.

Variable definitions:

PEXPDIV = The value of Blau index that represents educational and professional background diversity on the board.
GENDIV = The proportion of women on the board.
BRDIND = The number of independent directors divided by the total number of directors on the board.
BRDSIZE = The number of directors on the board.
BRDACTV = The number of board meetings per year.
DUAL = A dummy variable that takes the value of "1" if the roles of chairman and CEO are combined and "0" otherwise.
ROA = The ratio of earnings before interest and taxes to total assets.
GROWTH = The market value of firm's equity divided by the book value of equity at the end of the year.
LEV = The ratio of total long–term debt to total assets.
AUDITQ = The total number of firms in any industry audited by specific auditor divided by the total number of firms in that industry for the year.
MNGTOWN = The total number of shares held by executive directors divided by the total number of shares outstanding.
FIRMSIZE = The natural logarithm of total assets at the end of the year
DA = Accruals-based earnings management.
REM = Real activities earnings management.

5.5.3 Endogeneity and two-stage least squares (*2SLS*) regression

The main regression results might be subject to the potential endogeneity bias that might be caused by measurement errors, omitted variables, and/or simultaneity (John et al., 2014, p. 94; Lee et al., 2016; Roberts & Whited, 2013, p. 495; Wang, 2015, p. 2579). To address the endogeneity issue, the instrumental variable regression is employed to re-examine the association between board diversity and earnings management. The two-stage least squares (*2SLS*) technique is performed and following the previous literature (Barnhart & Rosenstein, 1998; Coles et al., 2008; Hermalin & Weisbach, 1991; Himmelberg et al., 1999; McKnight & Weir, 2009), the lagged values of the endogenous variables are used as instruments.

Before performing the *2SLS* regression, certain diagnostic tests need to be conducted to ascertain the validity of the chosen instruments. The results of these tests are reported in Table 5-7, Table 5-8, Table 5-9, and Table 5-10. They indicate that the selected instruments are relevant (not weak) as *F*-statistics of the first stage regression are above 10, the standard Staiger and Stock (1997) rule of thumb. Results show also that the Sanderson and Windmeijer (2016) conditional *F*-statistics exceed Stock and Yogo (2005) critical values of 20.74 and 20.53 for both *AEM* and *REM* model respectively, implying that any bias from using the selected instruments is less than 5% of the bias from employing a *OLS* regression, with a 5% level of significance.

Results of the second-stage of *2SLS* regression are reported in *Table 5-11*. They show that gender diversity (*GENDIV*) continues to have insignificant effect on earnings management. They also show that board professional experience diversity (*PEXPDIV*) is still positive and significantly related to *AEM* while it continues to have insignificant effect on *REM*. In general, the main results are robust after controlling for the endogeneity issue.

Table 5-7: Regressing AEM on PEXPDIV tests for weak instruments

	***F*-statistics (*p*-value)**	***SW F*-statistics**
PEXPDIV	418.58 (0.00)	967.09
BRDIND	88.70 (0.00)	242.10
BRDSIZE	230.44 (0.00)	497.76
DUAL	43.79 (0.00)	267.05
ROA	11.57 (0.00)	55.36
LEV	66.33 (0.00)	124.08
AUDITQ	170.65 (0.00)	929.77
MNGTOWN	670.68 (0.00)	684.00
FIRMSIZE	2363.53 (0.00)	443.89
REM	114.31 (0.00)	221.98

Variable definitions:
PEXPDIV = The value of Blau index that represents educational and professional background diversity on the board.
BRDIND = The number of independent directors divided by the total number of directors on the board.
BRDSIZE = The number of directors on the board.
DUAL = A dummy variable that takes the value of "1" if the roles of chairman and CEO are combined and "0" otherwise.
ROA = The ratio of earnings before interest and taxes to total assets.
LEV = The ratio of total long–term debt to total assets.
AUDITQ = The total number of firms in any industry audited by specific auditor divided by the total number of firms in that industry for the year.
MNGTOWN = The total number of shares held by executive directors divided by the total number of shares outstanding.
FIRMSIZE = The natural logarithm of total assets at the end of the year
REM = Real activities earnings management.

Table 5-8: Regressing REM on PEXPDIV tests for weak instruments

	***F*-statistics (*p*-value)**	***SW F*-statistics**
PEXPDIV	19.15 (0.00)	138.03
BRDIND	27.83 (0.00)	144.38
BRDSIZE	18.94 (0.00)	75.75
DUAL	41.27 (0.00)	121.14
ROA	31.75 (0.00)	144.72
LEV	15.29 (0.00)	95.14
AUDITQ	15.26 (0.00)	110.15
MNGTOWN	33.02 (0.00)	256.10
FIRMSIZE	172.17 (0.00)	677.97

Variable definitions:
PEXPDIV = The value of Blau index that represents educational and professional background diversity on the board.
BRDIND = The number of independent directors divided by the total number of directors on the board.
BRDSIZE = The number of directors on the board.
DUAL = A dummy variable that takes the value of "1" if the roles of chairman and CEO are combined and "0" otherwise.
ROA = The ratio of earnings before interest and taxes to total assets.
LEV = The ratio of total long–term debt to total assets.
AUDITQ = The total number of firms in any industry audited by specific auditor divided by the total number of firms in that industry for the year.
MNGTOWN = The total number of shares held by executive directors divided by the total number of shares outstanding.
FIRMSIZE = The natural logarithm of total assets at the end of the year

Table 5-9: Regressing AEM on Gender tests for weak instruments

	***F*-statistics (*p*-value)**	***SW F*-statistics**
GENDIV	65.78 (0.00)	519.01
BRDIND	41.65 (0.00)	200.33
BRDSIZE	159.27 (0.00)	447.58
DUAL	34.59 (0.00)	258.49
ROA	11.76 (0.00)	81.80
LEV	76.30 (0.00)	453.51
AUDITQ	136.03 (0.00)	1087.52
MNGTOWN	422.18 (0.00)	317.38
FIRMSIZE	2358.66 (0.00)	312.16
REM	89.44 (0.00)	121.37

Variable definitions:
GENDIV = The proportion of women on the board.
BRDIND = The number of independent directors divided by the total number of directors on the board.
BRDSIZE = The number of directors on the board.
DUAL = A dummy variable that takes the value of "1" if the roles of chairman and CEO are combined and "0" otherwise.
ROA = The ratio of earnings before interest and taxes to total assets.
LEV = The ratio of total long–term debt to total assets.
AUDITQ = The total number of firms in any industry audited by specific auditor divided by the total number of firms in that industry for the year.
MNGTOWN = The total number of shares held by executive directors divided by the total number of shares outstanding.
FIRMSIZE = The natural logarithm of total assets at the end of the year
REM = Real activities earnings management.

Table 5-10: Regressing REM on Gender tests for weak instruments

	***F*-statistics (*p*-value)**	***SW F*-statistics**
GENDIV	27.43 (0.00)	82.72
BRDIND	31.28 (0.00)	130.20
BRDSIZE	14.80 (0.00)	82.14
DUAL	50.86 (0.00)	77.32
ROA	13.39 (0.00)	84.97
LEV	8.96 (0.00)	46.26
AUDITQ	10.97 (0.00)	115.72
MNGTOWN	93.76 (0.00)	205.80
FIRMSIZE	218.88 (0.00)	107.27

Variable definitions:
GENDIV = The proportion of women on the board.
BRDIND = The number of independent directors divided by the total number of directors on the board.
BRDSIZE = The number of directors on the board.
DUAL = A dummy variable that takes the value of "1" if the roles of chairman and CEO are combined and "0" otherwise.
ROA = The ratio of earnings before interest and taxes to total assets.
LEV = The ratio of total long–term debt to total assets.
AUDITQ = The total number of firms in any industry audited by specific auditor divided by the total number of firms in that industry for the year.
MNGTOWN = The total number of shares held by executive directors divided by the total number of shares outstanding.
FIRMSIZE = The natural logarithm of total assets at the end of the year

Table 5-11: 2SLS Results

	1st model		*2nd model*	
	AEM	***REM***	***AEM***	***REM***
PEXPDIV	0.116*** (4.5)	-0.067 (-0.16)		
GENDIV			0.001 (1.4)	0.012 (1.67)
BRDIND	-0.000 (-1.09)	0.002 (0.37)	-0.000 (-0.62)	-0.000 (-0.06)
BRDSIZE	0.001 (0.46)	-0.025 (-0.54)	0.003 (0.79)	-0.039 (-1.32)
BRDACTV	0.001 (0.66)	0.005 (0.77)	0.001 (0.73)	0.010 (1.64)
DUAL	0.032** (2.38)	0.078 (0.28)	0.024 (1.2)	0.117 (0.58)
ROA	0.099 (0.67)	-0.469 (-0.44)	0.0812 (0.58)	-0.919 (-1.23)
GROWTH	-0.003* (-1.8)	-0.008 (-0.73)	-0.003* (-2.03)	0.001 (0.13)
LEV	-0.067 (-1.43)	0.302 (0.49)	-0.044 (-1.06)	-0.011 (-0.03
AUDITQ	-0.001** (-2.75)	0.001 (0.32)	-0.001 (-1.29)	0.002 (0.6)
MNGTOWN	0.001 (0.04)	0.199 (0.64)	-0.019 (-0.71)	0.091 (0.39)
FIRMSIZE	0.002** (0.44)	0.015 (0.27)	-0.001 (-0.2)	-0.066 (-0.82)
REM	0.046*** (3.41)		0.039* (1.99)	
DA		0.867** (2.59)		0.9682** (2.7)
Constant	-0.067 (-0.65)	-0.341 (-0.3)	0.033 (0.28)	1.255 (0.78)
Adjusted-R^2	**27.97%**	**25.72%**	**23.56%**	**25.04%**

*, **, and *** denote significance at the 10%, 5%, and 1% levels respectively.
Robust *t*-statistics (*z*-statistics) appear in parentheses.

Variable definitions:
PEXPDIV = The value of Blau index that represents educational and professional background diversity on the board.
GENDIV = The proportion of women on the board.
BRDIND = The number of independent directors divided by the total number of directors on the board.
BRDSIZE = The number of directors on the board.
BRDACTV = The number of board meetings per year.
DUAL = A dummy variable that takes the value of "1" if the roles of chairman and CEO are combined and "0" otherwise.
ROA = The ratio of earnings before interest and taxes to total assets.
GROWTH = The market value of firm's equity divided by the book value of equity at the end of the year.
LEV = The ratio of total long–term debt to total assets.
AUDITQ = The total number of firms in any industry audited by specific auditor divided by the total number of firms in that industry for the year.
MNGTOWN = The total number of shares held by executive directors divided by the total number of shares outstanding.
FIRMSIZE = The natural logarithm of total assets at the end of the year
DA = Accruals-based earnings management.
REM = Real activities earnings management.

5.5.4 Additional Sensitivity Analyses

Following Armstrong, Jagolinzer, and Larcker (2010), matching analyses were implemented as a robustness check. The propensity-score matching methodology was employed to match firms that have different diversity categories among their boards. The propensity scores are estimated via a logit model, in which the dependent variable for the first hypothesis is a dummy variable that takes the value of "1" if directors on the board have only business backgrounds and "0" otherwise (*BUSINESS*). For the second hypothesis, the dependent variable is a dummy variable that takes the value of "1" if the proportion of women on the board is above the median for the sample and "0" otherwise for the second hypothesis (*HIGH_GEN*).

To examine the impact of professional-background diversity on earnings management, firms with directors having only business backgrounds were matched to those firms where their boards have directors with diverse backgrounds. One-to-four rather than one-to-one matching was employed because there are relatively few observations with only business backgrounds compared to the observations with diverse backgrounds.

Results of the matched-sample analysis are reported in *Table 5-12*. They show that *BUSINESS* has negative and statistically significant coefficients of -0.034 and -0.234 for both *AEM* and *REM* respectively. These results suggest that family firms having directors with only business backgrounds are less inclined to manage earnings than firms having directors with diverse professional backgrounds do. They agree with main analysis findings with the exception of *REM* coefficient that becomes statistically significant in *Table 5-12*. The rise in statistical significance might be due to the use of different proxies for professional experience diversity, Blau Index and a dummy variable capturing business versus non-business backgrounds. Even with that

difference, results still show that professional backgrounds diversity is associated with increased manipulation of corporate earnings.

Regarding gender, the second diversity aspect, Table 5-12 shows that the coefficients for *AEM* and *REM* are both insignificant (0.020 and 0.014 respectively). There is no evidence that the presence of women on boards appear to be crucial in curbing earnings management. This result is expected as most of the sample has a proportion of females on the board of directors of less than 25%. It confirms the conclusions reached in the main analysis.

Table 5-12: Propensity score tests of earnings management on diversity variables

	1st model		***2nd model***	
	AEM	***REM***	***AEM***	***REM***
BUSINESS	-0.034**	-0.234***		
	(-2.54)	(-3.06)		
HIGH_GEN			0.020	0.014
			(0.95)	(0.13)

*, **, and *** denote significance at the 10%, 5%, and 1% levels respectively.
Robust *z*-statistics appear in parentheses.

Variable definitions:
BUSINESS = A dummy variable that takes the value of "1" if directors on the board have only business backgrounds and "0" otherwise.
HIGH_GEN = A dummy variable that takes the value of "1" if the proportion of women on the board is above the median for the sample and "0" otherwise.
AEM = Accruals-based earnings management.
REM = Real activities earnings management.

5.6 Conclusion

The previous chapter investigated the impact of promoting professional experience diversity and social diversity among corporate boards on their effectiveness in mitigating earnings management for a sample of UK *FTSE 350* firms and results showed that board professional experience diversity is positively associated with earnings management while no significant association between gender diversity and earnings management measures. However, this chapter re-examines the association between both professional experience diversity and social diversity and earnings

management for a sample of UK listed firms from 2010 through 2017 but in the family business context. Mainly, results do not differ from those reported in the second study with the exception that *PEXPDIV* is positively associated with *AEM* instead of *REM*. These results suggest that family firms should aim to achieve the targets set by the Hampton-Alexander Review (2017) for female representation on corporate boards and in order to be effective in mitigating earnings management, females should be appointed based on merit instead of being affiliated to the controlling family. Results also suggest that unaffiliated directors should have accounting/finance or a business qualification in general that would provide them with the knowledge and skills required to detect the different ways employed by family firms to manipulate reported earnings.

Chapter 6: Conclusion

6.1 Introduction

The main purpose of this thesis is to investigate the impact of board characteristics, including diversity, on the board effectiveness in performing its monitoring function. Three empirical studies are included in this thesis. The first study (Chapter 2) investigates the impact of board characteristics; namely independence, *CEO* duality, activity and size; on both accrual-based and real activities earnings management. The second study (Chapter 3) examines the impact of promoting both professional background and social diversity on earnings management (*AEM* and *REM*) for a sample of *FTSE 350* UK listed companies. Finally, the third empirical study (Chapter 4) re-examines the association between both professional background and social diversity and earnings management for a sample of UK listed firms from 2010 through 2017 but in a different context, which is the family business context.

6.2 Summary of the Key Findings

The first study investigates the impact of board characteristics; particularly independence, *CEO* duality activity and size; on earnings management activities. Findings indicate no significant association between the number of board meetings and the two techniques of earnings management. A significant negative association is found between board independence and both *AEM* and *REM*, suggesting that hiring independent directors on the board mitigates earnings management. Moreover, increasing the size of the board mitigates one technique of earnings management (*REM*), but its effectiveness in mitigating *REM* rests on different factors. Finally, *CEO* duality is also negatively associated with *REM*. As most of the companies that combine the roles of the chairperson and the *CEO* are considered family-controlled business,

this finding might be specific to family firms, in which executives have incentives to manage reported earnings downward compared to non-family firms (Achleitner et al., 2014). These results suggest that some of the characteristics of the board of directors are effective in mitigating one technique of earnings management (e.g. board size and *CEO* duality), others are effective in mitigating both techniques of earnings management (board independence) and finally, board activity is not related to both of them.

The first study results reveal that effectiveness of increasing the board size as a monitoring mechanism might subject to some endogenous factors. This raises the question of whether increasing the board size through hiring members with varied combination of qualities and expertise would impact earnings management. Therefore, the second empirical study (Chapter 3) investigates the diversity of the board of directors and its impact on the board effectiveness in performing its monitoring function. This chapter examines two types of board diversity, namely professional background and social diversity, on both *AEM* and *REM* as proxies for the effectiveness of the board monitoring function. Results indicate that board professional background diversity is positively associated with *REM* while it is insignificantly associated with *AEM*. No significant association is also found between gender diversity and earnings management measures. These results suggest that board diversity might have negative impacts on the board effectiveness in performing its monitoring function.

The third empirical study (Chapter 4) focuses on board diversity in the family business and examines its impact on the board effectiveness in performing its monitoring function for a sample of *FTSE All Share* UK listed family firms. Mainly results do not differ from those reported in chapter 3 with the exception that *PEXPDIV*

is positively associated with *AEM* instead of *REM*. These results still emphasize the negative implications that board diversity might have in relation to performing the monitoring function.

6.3 Contributions to the body of knowledge

This study makes several contributions to the literature. First, it contributes to the corporate governance and earnings management literature through examining the effect of several characteristics of the board of directors on both *AEM* and *REM* simultaneously instead of considering either type of earnings management activities in isolation. Considering only one type of earnings management activities cannot lead to an overall view of earnings management activities (Fields et al., 2001; Zang, 2012) and definitive conclusions about the effectiveness of board oversight function.

Second, this thesis considers the impact of professional background diversity on the board effectiveness in performing its monitoring function. It contributes to filling the gap indicated by previous research that much of the board diversity literature has focused on only gender diversity and there are unanswered questions need to be addressed related to other aspect of diversity and their effect on the board decisions (Adams et al., 2015; Hillman, 2015).

Third, this research considers two diversity aspects capturing the professional background and social diversity simultaneously. This provides a clearer picture of the compound effect of promoting diversity on the board monitoring function.

Fourth, the current research contributes also to the family business literature through investigating board diversity in the family business context. Finally, this thesis contributes also to the scant literature of real earnings management in family firms (Ferramosca & Ghio, 2018, p. 123; Tian et al., 2018).

6.4 Policy Implications

The findings of this thesis have several implications for investors, regulators and policy makers for the development of governance mechanisms. First, results of the first study show that board independence significantly impacted both *AEM* and *REM*. However, there are some factors affecting only one of the two earnings management measures (e.g. audit quality). These results suggest that stakeholders should pay attention to both *AEM* and *REM*. For instance, they should be aware that when companies are audited by highly specialised auditors, this does not mean that these companies are free from earnings manipulation activities.

Second, results reveal that professional background diversity positively impacts *REM*. This results has implications for regulators and policy makers, suggesting that although board diversity has positive impacts such as demonstrating an absence of discrimination, it might have negative implications on the board effectiveness in performing its monitoring function. To overcome these negative implications, it can be suggested that directors with limited business background should have a business qualification that would provide them with the skills and knowledge required to evaluate the financial health of their companies and to detect the different ways employed by managers to manipulate their companies' earnings.

Third, results show that female directors are not effective in performing the monitoring function due to their limited presentation on the board. Accordingly, this thesis recommends that UK *FTSE 350* listed companies achieve the target set by the Hampton-Alexander Review (2017) in relation to the female representation on corporate boards.

Finally, results show that professional background diversity is also positively associated with one of the earnings management measures in family-controlled businesses. This result suggests that directors that are unaffiliated to the family should have accounting/finance or a business qualification in general that would provide them with the knowledge and skills required to detect the different ways that executives of family firms employ to report lower earnings with the aim of generating hidden reserves to be maintained inside their firms.

6.5 Limitations and Future Research

This thesis is not free from limitations that might serve as a starting point for future research. First, a common limitation is associated with earning management research, which is related to the measurement error in the estimation of earnings management proxies. So far, the literature offers no model that estimates abnormal levels of earnings (used as a proxy for earnings management) with 100 per cent accuracy. Further research is recommended on this area to improve earnings management measures.

Second, this study is conducted within the agency theory framework where earnings management practices are expected to be opportunistic rather than beneficial. It does not take into account the view that under certain circumstances the effect of earnings management is beneficial to the shareholders, particularly where accounting discretion is used in improving the informativeness of reported earnings (Abdul Rahman & Ali, 2006; Peasnell et al., 2005).

Third, the sample included only UK listed companies. It would be interesting for scholars to include firms from other countries as different cultures can influence firms' selection of the members to be appointed on the board.

Fourth, the current thesis shows insignificant results for promoting gender diversity on the board. In this regard, it would be interesting to investigate females' qualities, such as their professional and educational background, and their moderating effect on the relationship between gender diversity and earnings management.

Fifth, the final study considered family firms as a homogeneous group. Future research could investigate family firm-specific characteristics (for example, acquired by family owners versus created or inherited firms and succession versus non-succession family firms) and their impact on incentives for earnings management and directors selection.

Sixth, the last study investigated the impact of promoting diversity on earnings management for 32 companies, which are all *FTSE all share* companies that are family-controlled after excluding financial and mining companies. Future research could examine other indices having a larger sample of family firms.

Finally, the moderating effect of whether a director is affiliated with the family or not could also be investigated as research indicated that family firms and non-family firms select their directors from different pools of candidates and are guided by different motivations (Jorissen et al., 2017).

Appendices

Appendix A

Variables	Description	Data Sources	
Dependent variables:		**Primary**	**Secondary**
DA_{it}	The absolute value of discretionary accruals. It is used as a proxy for *AEM*. It is the estimated residuals from the following industry-year regression: $\frac{TA_{ij,t}}{A_{ij,t-1}} = \alpha_0 + \alpha_1\left[\frac{1}{A_{ij,t-1}}\right] + \alpha_2\left[\frac{\Delta REV_{ij,t} - \Delta REC_{ij,t}}{A_{ij,t-1}}\right] + \alpha_3\left[\frac{PPE_{ij,t}}{A_{ij,t-1}}\right] + \alpha_4 ROA_{ij,t-1} + \varepsilon_{ij,t}$		
REM_{it}	It is estimated using the following equation: $REM_{ij,t} = \left(-A\_CFO_{ij,t} + A\_PROD_{ij,t} - A\_DISX_{ij,t}\right)$ Where: $A\_CFO_{it,j}$ is the estimated residuals from the following industry-year regression: $\frac{CFO_{ij,t}}{A_{ij,t-1}} = \alpha_0 + \alpha_1\left[\frac{1}{A_{ij,t-1}}\right] + \alpha_2\left[\frac{S_{ij,t}}{A_{ij,t-1}}\right] + \alpha_3\left[\frac{\Delta S_{ij,t}}{A_{ij,t-1}}\right] + \varepsilon_{ij,t}$ $A\_PROD_{it,j}$ is the estimated residuals from the following industry-year regression: $\frac{PROD_{ij,t}}{A_{ij,t-1}} = \alpha_0 + \alpha_1\left[\frac{1}{A_{ij,t-1}}\right] + \alpha_2\left[\frac{S_{ij,t}}{A_{ij,t-1}}\right] + \alpha_3\left[\frac{\Delta S_{ij,t}}{A_{ij,t-1}}\right] + \alpha_4\left[\frac{\Delta S_{ij,t-1}}{A_{ij,t-1}}\right] + \varepsilon_{ij,t}$ $A\_DISX_{it,j}$ is the estimated residuals from the following industry-year regression: $\frac{DISX_{ij,t}}{A_{ij,t-1}} = \alpha_0 + \alpha_1\left[\frac{1}{A_{ij,t-1}}\right] + \alpha_2\left[\frac{S_{ij,t-1}}{A_{ij,t-1}}\right] + \varepsilon_{ij,t}$		
Diversity Variables:			
$PEXPDIV_{it}$	The value of Blau index that represents educational and professional background diversity on the board.	Annual reports.	Company websites and directors' LinkedIn profiles.
$GENDIV_{it}$	The proportion of women on the board.	Annual reports.	
Control Variables:			
$BRDIND_{it}$	The number of independent directors divided by the total number of directors on the board.	Annual reports.	Annual reports.
$BRDSIZE_{it}$	The number of directors on the board.	Annual reports.	
$BRDACTV_{it}$	The number of board meetings per year.	Annual reports.	
$DUAL_{it}$	A dummy variable that takes the value of "1" if the roles of chairman and CEO are combined and "0" otherwise.	Annual reports.	
ROA_{it}	The ratio of earnings before interest and taxes to total assets.	DataStream.	Thomson One and FAME.

$GROWTH_{it}$	The market value of firm's equity divided by the book value of equity at the end of the year.	DataStream.	Thomson One and FAME.
LEV_{it}	The ratio of total long–term debt to total assets.	DataStream.	Thomson One and FAME.
$AUDITQ_{it}$	The total number of firms in any industry audited by specific auditor divided by the total number of firms in that industry for the year.	Annual reports.	
$MNGTOWN_{it}$	The total number of shares held by executive directors divided by the total number of shares outstanding.	DataStream.	Thomson One and FAME.
$BLOCK_{it}$	A dummy variable that takes the value of 1 if the firm has an outside shareholder owning 10% or more of the outstanding shares, and 0 otherwise.	DataStream.	

Earnings management variables:		**Data Sources**	
Dependent variables:		**Primary**	**Secondary**
TAij,t	Total accruals for firm i in industry j for year t, which equals earnings before extraordinary items and discontinued operations in year t less cash flows from operating activities during year t.	DataStream.	Thomson One and FAME.
Aij,t–1	Total assets for firm i in industry j at the beginning of year t.	DataStream.	Thomson One and FAME.
ΔREVij,t	Change in sales revenues for firm i in industry j during year t.	DataStream.	Thomson One and FAME.
ΔRECij,t	Change in account receivable for firm i in industry j during year t.	DataStream.	Thomson One and FAME.
PPEij,t	The gross property plant and equipment for firm i in industry j for year t.	DataStream.	Thomson One and FAME.
ROAij,t-1	The return on asset for firm i in industry j for at the beginning of year t.	DataStream.	Thomson One and FAME.
εij,t	The error term for firm i in industry j for year t.	DataStream.	Thomson One and FAME.
CFOij,t	The cash flows from operating activities for firm i in industry j during year t.	DataStream.	Thomson One and FAME.
Sij,t	The sales for firm i in industry j during year t.	DataStream	Thomson One and FAME.
ΔSij,t	The change in sales for firm i in industry j during year t, which equals (St – St-1).	DataStream.	Thomson One and FAME.
DISXij,t	The discretionary expenditures which equals to sum of research and development (*R&D*) and selling, general, and administrative (*SGA*) expenses incurred for firm i in industry j during year t.	DataStream.	Thomson One and FAME.
$S_{ij,t-1}$	The sales for firm *i* in industry *j* during year *t-1*.	DataStream.	Thomson One and FAME.

Appendix B

Variables	Description	Data Sources	
Dependent variables:		**Primary**	**Secondary**
DA_{it}	It is used as a proxy for *AEM*. It is the estimated residuals from the following industry-year regression: $\frac{TA_{ij,t}}{A_{ij,t-1}} = \alpha_0 + \alpha_1\left[\frac{1}{A_{ij,t-1}}\right] + \alpha_2\left[\frac{\Delta REV_{ij,t} - \Delta REC_{ij,t}}{A_{ij,t-1}}\right] + \alpha_3\left[\frac{PPE_{ij,t}}{A_{ij,t-1}}\right] + \alpha_4 ROA_{ij,t-1} + \varepsilon_{ij,t}$		
REM_{it}	It is estimated using the following equation: $REM_{ij,t} = \left(-A\_CFO_{ij,t} + A\_PROD_{ij,t} - A\_DISX_{ij,t}\right)$ Where: $A\_CFO_{it,j}$ is the estimated residuals from the following industry-year regression: $\frac{CFO_{ij,t}}{A_{ij,t-1}} = \alpha_0 + \alpha_1\left[\frac{1}{A_{ij,t-1}}\right] + \alpha_2\left[\frac{S_{ij,t}}{A_{ij,t-1}}\right] + \alpha_3\left[\frac{\Delta S_{ij,t}}{A_{ij,t-1}}\right] + \varepsilon_{ij,t}$ $A\_PROD_{it,j}$ is the estimated residuals from the following industry-year regression: $\frac{PROD_{ij,t}}{A_{ij,t-1}} = \alpha_0 + \alpha_1\left[\frac{1}{A_{ij,t-1}}\right] + \alpha_2\left[\frac{S_{ij,t}}{A_{ij,t-1}}\right] + \alpha_3\left[\frac{\Delta S_{ij,t}}{A_{ij,t-1}}\right] + \alpha_4\left[\frac{\Delta S_{ij,t-1}}{A_{ij,t-1}}\right] + \varepsilon_{ij,t}$ $A\_DISX_{it,j}$ is the estimated residuals from the following industry-year regression: $\frac{DISX_{ij,t}}{A_{ij,t-1}} = \alpha_0 + \alpha_1\left[\frac{1}{A_{ij,t-1}}\right] + \alpha_2\left[\frac{S_{ij,t-1}}{A_{ij,t-1}}\right] + \varepsilon_{ij,t}$		
Diversity Variables:			
$PEXPDIV_{it}$	The value of Blau index that represents educational and professional background diversity on the board.	Annual reports.	Company websites and directors' LinkedIn profiles.
$GENDIV_{it}$	The proportion of women on the board.	Annual reports.	
Control Variables:			
$BRDIND_{it}$	The number of independent directors divided by the total number of directors on the board.	Annual reports.	Annual reports.
$BRDSIZE_{it}$	The number of directors on the board.	Annual reports.	
$BRDACTV_{it}$	The number of board meetings per year.	Annual reports.	
$DUAL_{it}$	A dummy variable that takes the value of "1" if the roles of chairman and CEO are combined and "0" otherwise.	Annual reports.	
ROA_{it}	The ratio of earnings before interest and taxes to total assets.	DataStream	Thomson One and FAME
$GROWTH_{it}$	The market value of firm's equity divided by the book value of equity at the end of the year.	DataStream	Thomson One and FAME

LEV_{it}	The ratio of total long–term debt to total assets.	DataStream	Thomson One and FAME
$AUDITQ_{it}$	The total number of firms in any industry audited by specific auditor divided by the total number of firms in that industry for the year.	Annual reports.	
$MNGTOWN_{it}$	The total number of shares held by executive directors divided by the total number of shares outstanding.	DataStream	Thomson One and FAME
$FIRMSIZE_{it}$	The natural logarithm of total assets at the end of the year.	DataStream	Thomson One and FAME

Earnings management variables:		**Data Sources**	
Dependent variables:		**Primary**	**Secondary**
TAij,t	Total accruals for firm i in industry j for year t, which equals earnings before extraordinary items and discontinued operations in year t less cash flows from operating activities during year t.	DataStream	Thomson One and FAME
Aij,t–1	Total assets for firm i in industry j at the beginning of year t.	DataStream	Thomson One and FAME
ΔREVij,t	Change in sales revenues for firm i in industry j during year t.	DataStream	Thomson One and FAME
ΔRECij,t	Change in account receivable for firm i in industry j during year t.	DataStream	Thomson One and FAME
PPEij,t	The gross property plant and equipment for firm i in industry j for year t.	DataStream	Thomson One and FAME
ROAij,t-1	The return on asset for firm i in industry j for at the beginning of year t.	DataStream	Thomson One and FAME
εij,t	The error term for firm i in industry j for year t.	DataStream	Thomson One and FAME
CFOij,t	The cash flows from operating activities for firm i in industry j during year t.	DataStream	Thomson One and FAME
Sij,t	The sales for firm i in industry j during year t.	DataStream	Thomson One and FAME
ΔSij,t	The change in sales for firm i in industry j during year t, which equals (St – St-1).	DataStream	Thomson One and FAME
DISXij,t	The discretionary expenditures which equals to sum of research and development (*R&D*) and selling, general, and administrative (*SGA*) expenses incurred for firm i in industry j during year t.	DataStream	Thomson One and FAME
$S_{ij,t-1}$	The sales for firm *i* in industry *j* during year *t-1*.	DataStream	Thomson One and FAME

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