Audit Quality, IPOs and Earnings Management: Evidence from Saudi Arabia

The thesis is submitted in partial fulfilment of the requirements for the award of the degree of Doctor of Philosophy in Accounting and Financial Management at the University of Portsmouth.

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Abstract

This research aims to examine earnings management practices in the Kingdom of Saudi Arabia. This research was conducted in response to the ban placed on Deloitte by the Capital Market Authority (CMA) from carrying out auditing work for listed firms in the Kingdom for two years, starting 1 June 2015. A large volume of published studies provide evidence that auditor size (Big 4) plays an essential role in constraining earnings management and providing high audit quality. However, banning one of the Big 4 raises a question about the role of these auditors in constraining engagement in earnings management in Saudi Arabia. It also raises a question of whether Deloitte’s clients managed earnings compared with companies audited by the rest of the Big 4 accounting firms. This research uses a sample of 85 non-financial firms for the period from 2004 to 2014. This research finds that the Big 4 firms have a role in curbing earnings management only in income-decreasing activities. Moreover, this research finds that firms audited by Deloitte do not differ from those audited by the other Big 4 in terms of earnings management. CMA banned Deloitte from auditing any listed firms because of the collapse in 2012 of the Al-Mojil Group, which had gone public in 2008. Deloitte audited the pre-IPO year financial statements of Al-Mojil as well as the four years after the group went public, from 2008 to 2011. This dilemma raises doubts regarding the possibility of engagement in earnings management before going public and the audit quality in IPO firms in the Saudi context. Therefore, this research examines firms’ earnings management engagement before going public and audit quality in pre-IPO years. Based on a sample of 42 non-financial IPO firms for the period from 2005 to 2015, the findings of the current research confirm that the Saudi IPO firms did not engage in earnings management in the year before the IPO or the year of going public. Furthermore, the results of testing the role of the Big 4 in IPO firms show that the Big 4 firms are no deterrent to engagement in earnings management in pre-IPO years. This research finds that IPO firms audited by Deloitte did not engage in earnings management.
Declaration

‘Whilst registered as a candidate for the above degree, I have not been registered for any other research award. The results and conclusions embodied in this thesis are the work of the named candidate and have not been submitted for any other academic award.’

Abdulaziz Alsultan

Date: 12/09/2017
Dedication

I dedicate this thesis to the memory of my mother who passed away during my Master’s study, as the slightest return for her love, encouragement and inspiration. I also dedicate this thesis to my beloved father.
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All praise is due to Allah (God) for giving me the strength, health and patience to complete this thesis. Without Allah’s grace, the completion of this thesis would not have been possible.

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<tr>
<td>SEO</td>
<td>Seasoned Equity Offerings</td>
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<td>OLS</td>
<td>Ordinary Least Squares</td>
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<td>IFRS</td>
<td>International Financial Reporting Standards</td>
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<td>IPO</td>
<td>Initial Public Offerings</td>
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<td>SMEs</td>
<td>Small and Medium-Sized Enterprises</td>
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<tr>
<td>MCI</td>
<td>The Ministry of Commerce and Investment</td>
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<td>CMA</td>
<td>The Capital Market Authority</td>
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<tr>
<td>SAMA</td>
<td>Saudi Arabian Monetary Agency</td>
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<td>Tadawul</td>
<td>The Stock Exchange of Saudi Arabia</td>
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<tr>
<td>SOCPA</td>
<td>Saudi Organisation for Certified Public Accountants</td>
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<td>SSM</td>
<td>Saudi Stock Market</td>
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1.1 Overview

General financial reporting is a means for the managers of a firm to communicate financial information and the performance of the company with stakeholders, as “The objective of general purpose financial reporting is to provide financial information about the reporting entity that is useful to existing and potential investors, lenders and other creditors in making decisions about providing resources to the entity” (Conceptual Framework for Financial Reporting, 2010, p. A25). Healy and Wahlen (1999) argue that as those at management level use financial reports to communicate the performance of their firms, accounting standards allow them to apply some judgement in their financial reports, as those at this level know most about the business. Hence, these researchers claim that managers select their reporting methods and make estimates that match the real performance of their business. The most important element that reflects and summarises a firm’s performance is earnings (Dechow, 1994). Dechow (1994) states that earnings are used, for example, in management compensation contracts, by firms looking to go public, and by stakeholders. As managers have an interest in reporting better earnings than those produced on an accounting accruals basis, they may misuse the discretion granted them by accounting standards to engage in the opportunistic behaviours that are known as earnings management.

Earnings management is defined as occurring

“when managers use judgment in the 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).

Based on the literature, earnings management can be classified into three categories: accrual earnings management, real earnings management and classification-shifting.
According to Teoh, Welch, and Wong (1998b), there are three types of methods available to managers under accrual-based earnings management: accounting method choice, accounting method application/discretionary estimates, and accounting method timing. Under real earnings management, managers are able to engage in earnings manipulation through a range of operating decisions. For example, a firm’s managers are able to engage in expenses shifting, from recurring items to non-recurring items, to inflate the core profitability of the business (Zalata & Roberts, 2017).

According to Richardson (2000), conflicts of interest between managers and investors (agency conflict) are counted as the largest factor motivating managers to engage in earnings manipulation. It is argued that the separation of ownership and management increases the likelihood of engagement in earnings management (Francis, Maydew, & Sparks, 1999). This conflict comes with costs. Morris (1987) clarifies the costs that are related to an agency problem or conflict as follows: the cost of equity, which exists when managers act against the interests of shareholders; and the cost of bonding and monitoring managers, which exists to ensure that managers act in the interests of shareholders. It is argued by Watts and Zimmerman (1990) that using executive compensation may reduce the conflict between managers and shareholders. However, executive compensation induces those at a firm’s management level to maximise their wealth rather than that of the shareholders, by engaging in particular transactions with the aim of maximising their own compensation (Jensen & Meckling, 1976). Prior empirical studies confirm that managers engage in earnings management to maximise their own benefit (e.g. Baker, Collins, & Reitenga, 2003; Dye, 1991; Healy, 1985).

One of the monitoring devices recognised by agency theory as mitigating conflicts between managers and shareholders and reducing the agency problem is the appointment of an external auditor (Piot, 2001). Culpan and Trussel (2005) argue that an external auditor must be independent of any interest in order to act as an effective monitoring
device. Thus, hiring an external auditor as an independent party is intended to minimise
the agency problem by reducing the information asymmetry in a firm’s financial reports
(Piot, 2001). Moreover, the existence of information asymmetry drives the need for
external auditing (Hussainey, 2009). Nevertheless, the failure of auditors in detecting
financial scandals committed by firms’ managers raises the question of the role of the
external auditor as a deterrent regarding engagement in earnings management (Velury,
2003). Thus, the literature makes a distinction between auditors in terms of the quality of
their auditing. As a consequence of difficulties in measuring audit quality, the literature
offers a number of proxies1, such as auditor size (e.g., Big N vs non-Big N). A
considerable amount of the literature uses the size of an auditor as a proxy for audit quality
(e.g. Becker, Defond, Jiambalvo, & Subramanyam, 1998; Francis et al., 1999; Houqe,
Ahmed, & Zijl, 2017). After reviewing all proxies for audit quality, DeFond and Zhang
(2014) state that auditor size proxy is “its relatively high construct validity” (P.289).

An initial public offering (IPO) event is a strong motivator for engagement in earnings
management. In this event, a high level of information asymmetry exists between the IPO
firm’s management and its investors (Nam, Park, & Arthurs, 2014; Teoh et al., 1998b).

Teoh et al. (1998b) contend that the management of IPO firms engage in earnings
inflation in the year of going public because they gain from doing so. The researchers
also argue that this activity has the aim of inflating the stock price to a higher level, as the
lock-up period places restrictions on insiders such as managerial ownership. Moreover,
they claim that managers in these firms are motivated to meet the earnings forecasts that
the firm made in the prospectus to maintain their reputations. The potential litigation risk
that managers may face is another motivator.

1 More details about audit quality proxies are given in section 3.6
Previous studies find that IPO firms manipulate earnings management around an IPO event (e.g. Aharony, Lin, & Loeb, 1993; Alhadab, Clacher, & Keasey, 2015; Friedlan, 1994; Gao, Meng, Chan, & Wu, 2017; Neill, Pourciau, & Schaefer, 1995). IPO firms hire a high-quality auditor to send a positive signal to potential investors about the quality of the financial statement due to the existence of high information asymmetry (Brau & Fawcett, 2006). Moreover, Chang, Gygax, Oon, and Zhang (2008) argue that IPO firms signal the quality of the firm by hiring one of the Big 4 and the researchers provide evidence that audit quality minimises doubts about a firm’s value around IPO. Chang et al. (2008) argue that firms use signalling to moderate the existence of information asymmetry. A considerable amount of IPO literature uses signalling theory and offers several of the signals identified as being used by IPO firms. For example, IPO firms may send a positive signal by retaining a high proportion of ownership (Leland & Pyle, 1977). Moreover, the length of the lock-up period can be used as a signal to convey the long-term economic viability of the firm (Arthurs, Busenitz, Hoskisson, & Johnson, 2009). According to Brau and Fawcett (2006), a signal frequently used by chief financial officers (CFOs) to convey a positive image of an IPO firm is to emphasise historical earnings. This is because potential buyers rely on prospectuses as they have no other public sources of information.

1.2 Research Problem and Research Motivation
The purpose of this study is to investigate the ban preventing Deloitte carrying out auditing work for listed firms in Saudi Arabia for two years from 1 June 2015, which was imposed by the Saudi Capital Market Authority (CMA). The CMA banned Deloitte from auditing any listed firms because of the collapse of the Al-Mojil Group in 2012, which had been listed publicly in 2008 with earnings per share of 2.41 and 6.35 SR (Saudi riyals) for 2006 and 2007, respectively. However, the earnings per share were -1.44 SR for 2010 and the accumulated losses of the group’s capital until 31 December 2016 were 222%.
The sharp decline in reported earnings of the Al-Mojil Group raises the importance of examining the ban from an earnings management perspective. Therefore, this research fills a gap in the literature by examining the role of audit quality in mitigating earnings management and examining earnings management engagement and audit quality in IPO firms in the context of Saudi Arabia, where the ban occurred.

This study is motivated by the desire to add to the current extremely limited literature relating to earnings management in emerging economies, particularly in the Middle East. Most of the earnings management literature has focused on the more economically developed countries. Developing stock markets exhibit greater variation in practice and have a different environment from those of developed capital markets, the latter characterised by greater efficiency, stronger regulatory frameworks and well-developed financial reporting. In contrast, developing capital markets suffer from a lack of regulation, compliance, enforcement and transparency, and might, therefore, be less efficient. Leuz, Nanda, and Wysocki (2003, p. 525) provide evidence that the level of engagement in earnings management is high in countries that have “less developed capital markets and weak investor protection”. Saudi literature suffers from a shortage of accounting studies in general and particularly in audit quality and earnings management. Therefore, this study is motivated to add to Saudi accounting literature by providing an in-depth understanding of earnings management engagement and audit quality in the context of Saudi Arabia.

Moreover, this research is motivated to examine the audit quality in Saudi Arabia as banning one of the Big 4 auditing firms raises a question about the quality of auditing in the Saudi environment, especially this ban was the first ban imposed by the CMA since it was established in 2004. This study, therefore, provides insights into the quality of auditing in Saudi Arabia from an earnings management perspective.
This research is also motivated by a desire to examine earnings management engagement and audit quality in IPO firms, as the ban was imposed on Deloitte because of the collapse of one of these firms (the Al-Mojil Group). Furthermore, Alsehali (2014) encourages researchers to study earnings management around IPOs, as he finds earnings per share have a positive association with the premium valuation of IPOs in the Saudi Stock Market (SSM).

Saudi Arabia, a country that is representative of emerging economies, is especially worthy of study for several reasons. First, the Saudi economy is highly significant; it represents 25% of the total Arab gross domestic product (GDP) and 44% of the total Arab market capitalisation (Albassam, 2014). Since 2008, it has become one of the top 20 economies in the world (Al-Matari, Al-Swidi, & Fadzil, 2012). Saudi Arabia holds 18% of the world’s oil reserves and is the largest oil producer in the Organisation of the Petroleum Exporting Countries (OPEC), and was responsible for about 31% of the total OPEC production in 2015 (OPEC, 2015). Second, the Saudi government has been undertaking far-reaching steps aimed at improving the Kingdom’s investment climate, with a view to making it more appealing for the investment of domestic and foreign capital. Third, the market has only recently been established, and the regulatory framework is still developing.

Furthermore, the issuance of a conceptual framework of accounting in 1986 and the creation of the Saudi Organisation for Certified Public Accountants (SOCPA) in 1992 represented major landmarks in the development of the accounting and auditing profession in Saudi Arabia. The accounting profession in Saudi Arabia is not as strong as in developed countries as local standards are in use, only 23 for accounting\(^2\) and 17 for auditing. However, bank and insurance companies are required by the Saudi Arabian

\(^2\) From 1 January 2017, all listed firms have to apply by IFRS.
Monetary Agency (SAMA) to use international financial reporting standards (IFRS). Consequently, listed companies, other than banks and insurances, use US and IFRS standards to have a unified set of generally accepted accounting principles (GAAP). The professional environment is also not of high quality, as Alghamdi and Alangari (2005) report violations in implementing quality review programmes in audit firms. Overall, these factors are expected to affect earnings management practices in Saudi Arabia.

1.3 Research Aim and Objectives

The aim of this study is to examine earnings management practices in Saudi Arabia. Six objectives are drawn from the aim of this study as follows:

- To examine the role of the Big 4 auditors in acting as a deterrent to earnings management engagement in Saudi listed firms.
- To examine whether firms audited by Deloitte manage earnings compared with the other Big 4 firms.
- To examine whether Saudi IPO firms manage earnings before going public.
- To examine whether Saudi IPO firms manage earnings more in the year of going public compared with the pre-IPO year.
- To examine whether Saudi IPO firms audited by the Big 4 have less engagement in earnings management.
- To examine whether Saudi IPO firms audited by Deloitte have more engagement in earnings management.

1.4 Research Questions and Hypotheses

The research aim and objectives lay the foundation for addressing the questions posed in this study, which are:
1: Do external auditors mitigate engagement in earnings management in Saudi listed firms?

To answer this question, it is partitioned into the following sub-questions:

1.1: Do Big 4 auditors mitigate engagement in earnings management?

Hypothesis 1: There are no differences in the level of discretionary accruals in firms audited by the Big 4 compared with firms audited by non-Big 4 accounting firms.

1.2: Do firms audited by Deloitte engage in more earnings management?

Hypothesis 2: Firms audited by Deloitte are more likely to provide a higher level of discretionary accruals compared with firms audited by the other Big 4 accounting firms.

2: Do Saudi IPO firms manipulate earnings around an IPO event?

To answer this question, it is partitioned into the following sub-questions:

2.1: Do IPO firms engage in earnings management in the pre-listing year?

Hypothesis 3: Saudi IPO firms engage in income-increasing activities in the pre-IPO year.

2.2: Do IPO firms engage in more earnings management in the year of listing compared with the pre-listing year?

Hypothesis 4: Discretionary accruals in the IPO year are higher compared with the pre-IPO year.

2.3: Do IPO firms audited by the Big 4 engage less in earnings management?

Hypothesis 5: There is a negative relationship between income-increasing in pre-IPO years and Big 4 auditors.

2.4: Do firms audited by Deloitte engage in more earnings management?
Hypothesis 6: In pre-IPO years, firms audited by Deloitte are more likely to engage in income-increasing compared with firms audited by other accounting firms.

1.5 Summary of Research Methodology

This research adopts positivism as its research philosophy and assumes independence between the researcher and the subject because the feelings, perceptions and intuition of the researcher do not change the reality of what is being explored. This research adopts a quantitative method as its research strategy to draw meaningful results from a large body of quantified data. As the researcher developed the research questions and hypotheses based on the theories adopted, the researcher adopted a deductive approach to examine audit quality and engagement in earnings management in Saudi Arabia.

The data used to fulfil the objectives of this research were gathered manually from annual reports. Two data sets are used in this research. The first data set contains 85 non-financial firms listed on the SSM for the period from 2004 to 2014. This time period was selected because annual reports are unavailable before 2004 and the ban on Deloitte started in June 2015. Thus, no financial statements were audited by Deloitte for the years 2015 and 2016. The first data set is used to address the first main question of this research, which is related to audit quality. The second data set contains 42 IPO firms for the period from 2005 to 2015. The second data set is used to address the second main question of this research, which is related to IPOs.

For earnings management measurement, this study applies the work of Kothari, Leone, and Wasley (2005). The researchers claim that prior models have an error in the measurement of discretionary accruals and Dechow, Sloan, and Sweeney (1995) argue that prior models are possibly mis-specified as a firm’s performance has an impact on discretionary accruals. This study applies a cross-sectional method to estimate non-discretionary accruals. Peasnell, Pope, and Young (2000) examine cross-sectional and
time-series approaches and find that the cross-sectional method is more powerful for identifying accruals earnings manipulation.

This study includes firms’ financial characteristics that have an impact on discretionary accruals as control variables due to the importance of control variables in providing more precise results. Myers, Myers, and Omer (2003) argue that models without control variables may lead the primary variable to serve as a proxy for other factors that determine the independent variable. The following control variables are adopted in this study: firm size, cash flow, firm leverage, firm performance, firm growth, firm age, seasoned equity offering (SEO), and complexity. Six models are used to test the research hypotheses.

1.6 Research Contributions

This study offers contributions to the existing earnings management and audit quality literature. It also contributes to earnings management and IPO literature. Moreover, this study contributes to the literature of Saudi Arabia, in which accounting studies are limited, particularly in all aspects of the earnings management field. The findings of this research add to existing knowledge of audit quality and earnings management, as previous research has not reached the same conclusions in terms of the role of Big 4 auditors in acting as a deterrent to earnings management. For instance, DeAngelo (1981), Becker et al. (1998), Francis et al. (1999), Khalil and Ozkan (2016) and Houqe et al. (2017) find that firms audited by one of the Big N show less engagement in earnings management. In contrast, studies such as Jeong and Rho (2004), Haniffa, Abdul Rahman, and Fairuzana (2006), Piot and Janin (2007), Tsipouridou and Spathis (2012), Yasar (2013) and Huguet and Gandía (2016) find that there is no association between earnings management and Big N auditors.

In response to the ban placed on Deloitte by the CMA in Saudi Arabia, this study examines the impact of audit quality on earnings management. To the best of the
researcher’s knowledge, no other studies have examined this ban in all aspects of accounting research. This objective is achieved by examining the role of the Big 4, as a whole, in mitigating earnings management. Moreover, this study examines whether there is any difference between Deloitte and the other members of the Big 4 in mitigating earnings management. Unlike three previous studies that examine audit quality in Saudi Arabia, the sample of this study covers the entire period in which data became available, from 2004 to 2014. For example, Alabbas (2008) examines the association between Big 4 and earnings management for the period from 2002 to 2006, whereas Habbash and Alghamdi (2016) study this from 2006 to 2009. The most recent sample, by Gomaa (2013), from 2008 to 2012, does not contain all non-financial firms in the SSM. These studies also have weaknesses in their methodology. Moreover, this study adopts a different methodology by controlling for SEOs and excluding the lock-up period when estimating discretionary accruals, as Teoh, Welch, and Wong (1998a) report that SEO firms with a higher income growth in the year of issue and IPO are excluded to eliminate any discretionary accruals activities related to IPO firms (Myers et al., 2003). Furthermore, this study examines earnings management using current discretionary accruals, which has not been examined in the aforementioned studies. This study adopts the Industry Classification Benchmark (ICB) to classify firms in the SSM. As this study focuses on non-financial firms, the real-estate and multi-investment firm sectors are excluded, since they are classified as financial firms and were included in the other studies. This study is the first to examine whether the audit quality of Deloitte differs from that of the other Big 4 auditors. This study also contributes to audit quality and earnings management literature by examining audit quality in an IPO context.

3 More details about the weaknesses in the methodologies in the three studies are provided in chapter 3.
As mentioned above, Saudi literature suffers from a shortage of studies in the accounting field, and this study is the first to examine earnings management around IPOs in the context of Saudi Arabia. This study contributes to IPO and earnings management literature as there is a conflict in previous findings. Researchers such as Teoh et al. (1998b), DuCharme, Malatesta, and Sefcik (2001), Spohr (2004), Alhadab et al. (2015) and Gao et al. (2017) find that firms engage in earnings inflation around IPOs. Conversely, studies such as Ball and Shivakumar (2008), Cecchini, Jackson, and Liu (2012), Kimbro (2005) and Roosenboom, van der Goot, and Mertens (2003) find that firms do not engage in earnings inflation around IPOs. Therefore, this study contributes to the existing knowledge by investigating this phenomenon in a different legal environment that has not been examined before.

Armstrong, Foster, and Taylor (2015) argue that studies that examine earnings management in the year of an IPO ignore one important factor that may lead to inflating the accruals during the IPO stage. They state that IPOs report higher accruals in an IPO year due to capital raised during the IPO stage. They find that without controlling for the amount that IPOs received, the results will show that the IPO inflated earnings. However, when they control for proceeds, the results show that earnings are not inflated during the IPO year. This study contributes to the literature by adopting their methodology in a different legal environment: one that is considered a developing country. To the best of the researcher’s knowledge, no single study has examined this methodology in any different legal environment.

As mentioned above, this study is the first to investigate the ban placed on Deloitte in Saudi Arabia. The current research fills a gap in the literature by examining whether there is any difference between Deloitte and the other members of the Big 4 in mitigating earnings management. Moreover, this study fills the gap in the literature by investigating
earnings management engagement and audit quality in Saudi IPOs because of the ban placed on Deloitte following its dealings with one of these firms.

1.7 Structure of the Thesis

An overview of the Saudi Arabian market and regulations is given in the following chapter. It contains a brief background to Saudi Arabia and its legal system and includes an overview of the following regulatory authorities and laws related to listed firms in Saudi Arabia: the Ministry of Commerce and Industry (MCI), the CMA, SAMA, the Saudi Stock Exchange (or Tadawul), SOCPA, and Companies Law. Moreover, chapter 2 provides a brief of the accounting and auditing standards and listing rules in Saudi Arabia. Chapter 3 provides the conceptual framework for earnings management, in which a definition of earnings management is given and the earnings methods that may be used by managers to manage earnings are explained. The chapter also considers why managers are motivated to conduct opportunistic earnings management. A literature review is provided in this chapter.

Chapter 4 discusses the theories used to develop the hypotheses. Explanations of agency theory and signalling theory are provided in this chapter. It also provides hypotheses development for the contexts of both audit quality and IPOs.

Chapter 5 provides a brief explanation of the type of research philosophies used in the social sciences. The research strategies and approaches used are addressed in the chapter and an overview of the earnings management measurement provided. A description of the sample selection criteria is also given in the chapter.

Chapter 6 tests the hypotheses of this research and presents the results of testing the hypotheses regarding audit quality. It also provides the results of testing the hypotheses related to IPO events.
The seventh and final chapter presents the conclusion of this research, where the implications of the findings, the research limitations and the ideas for future research are provided.
Chapter 2: Saudi Context

2.1 Introduction

The preceding chapter presents an introduction to this study, namely, the research motivations, objectives and contributions. It also provides the structure of the thesis. This chapter aims to present an overview of the Kingdom of Saudi Arabia. The main purpose of this overview is to demonstrate how the Saudi environment is unlike others, particularly developing countries.

The background to the Kingdom is presented in Section 2.2. Section 2.3 provides an overview of the legal system in Saudi Arabia. Section 2.4 presents the administrative bodies that have oversight of firms listed on the SSM: the MCI, the CMA, SAMA, the Saudi Stock Exchange (Tadawul) and SOCPA. Section 2.5 gives an overview of Saudi Companies Law. Section 2.6 gives details of the accounting and auditing standards adopted by SOCPA. Section 2.7 provides the requirements for going public and the obligations that continue afterwards. Section 2.8 provides a summary of the chapter.

2.2 Saudi Arabia: Background

On the continent of Asia, Saudi Arabia is the fifth largest state, covering approximately 830,000 square miles of land area. Therefore, to acquire an elaborate study of the various elements of the state, it is important to acknowledge the general background of the political, economic and cultural aspects of the country. Thus, this section concentrates on the most significant components of the business environment of the Kingdom. The state formed by this unique and largest Gulf monarchy, or the KSA in its abbreviated form, is one of the fastest-growing countries emerging on the continent of Asia, and has Riyadh as its capital city.

The current state of Saudi Arabia was founded in 1932, which is considered to be the year that King Abdulaziz Ibn Saud declared the establishment of the Royal Saudi monarchy
in the peninsula containing the holiest sites of Islam (Al-Angari, 2004). Although 95% of the Kingdom is covered by desert, in terms of area, it is the largest country in the Middle East (Ministry of Economy and Planning, 2007).

Saudi Arabia is characterised by sovereign rule, which is restricted to the hereditary succession of the male children of King Ibn Saud. The centralisation of the Saudi Arabian monarchy is another feature of the ruling system of the country. This implies that the existing King has broad authoritative power, which also includes its internal and external affairs, as well as the administrative bodies. Defence positions and sensitive political aspects, such as foreign and internal affairs, as well as the Department of Defence, are also confined to the heirs of King Abdulaziz. The Consultative (Shura) Council, inaugurated in the year 1991, is found to play a very limited role in the Kingdom's legislative system. However, this Council acts as a helping body to the existing king of the country. It is also important to note that decision-making procedures and their implementation are begun once they have been approved by the king (Alghamdi, 2012).

The Kingdom of Saudi Arabia witnessed poverty in 1937, people at that time mainly relying on farming. It was in the same year that the Kingdom discovered a vast quantity of oil within its borders. At present, Saudi Arabia is the largest and leading producer of crude oil in the world due to the advent of crude oil, which has made the current position of the Kingdom stable and enabled it to develop. Oil has also brought steady development to the economic and social life of the inhabitants of the Kingdom. Saudi Arabia has also managed to acquire a stable political position in the Middle East, as well as worldwide.

In the present day, the economic stability of the Kingdom is dependent on the exporting of petroleum products, which is considered to be one of the chief sources of national income. It has been observed that Saudi Arabia gains over 60% of its entire national income through the export of petroleum products (Ministry of Economy and Planning 2016). According to the OPEC Annual Statistical Bulletin (2016), approximately 22% of
the total oil reserves in the world are located in Saudi Arabia. Even in the future, it is predicted that the Kingdom will still manage to retain its current position as the largest producer of crude oil in the world (OPEC, 2017). Furthermore, it is also expected that the Kingdom of Saudi Arabia will yield an enormous percentage of the oil produced amongst the members of OPEC. The Kingdom is characterised by 31% of the total production of oil in OPEC, which implies that it is a significant factor in the oil prices set throughout the world (OPEC, 2015). As claimed by the Ministry of Petroleum and Mineral Resources, the KSA will be able to produce and export oil for the coming century, due to its enormous reserves of crude oil. The estimated reserves of crude oil are around 266,578 billion barrels (Annual Statistical Bulletin, 2015).

In 2005, Saudi Arabia became an active participant of the World Trade Organisation (WTO) (Ministry of Commerce and Industry, 2006). Therefore, it can be said that the Kingdom has seen various reforms take place in the fields of business, politics and legal work procedures. These changes led to the foundation of the Saudi Arabian General Investment Authority. It is to be noted that the major objective of this authority is to remove impediments and deficiencies in the Kingdom by improving the environment for investment in the country. In order to internationalise the stock activities, and to make access easy for foreign investors, Saudi Arabia has announced that Tadawul will be facilitating the process. Tadawul is worth more than $564 billion on the Arab stock market and provides easy access to foreign investors.

2.3 The Legal System in Saudi Arabia

The legal system of a country plays a significant role in the implementation of its regulations and practices. The Constitution of Saudi Arabia is based on the principles of the Holy Quran. These protocols are based on the traditional views of the Prophet Mohammed (Sunnah), and other concurrent sources that are intrinsically related to the
laws of Islam (Sharīah), which are considered to be a code of conduct. Furthermore, it can also be said that, in the context of judicial procedures and general terms, Saudi Arabia is an Islamic state. It complies with the regulations and principles of Islam (Alharkan, 2005). The holy and sacred Muslim sites in Saudi Arabia are Mecca, which is the orientation to which the existing one billion followers of Islam have to pay homage through pilgrimage and direct their prayers, and Medina, where the emigration and burial site of the Prophet Mohammed is located (Falgi, 2009). Thus, Saudi Arabia has attained a significant position among Islamic and Arabic countries. Furthermore, the essential elements of life in Saudi Arabia are mostly ordered by the regulations and principles that are implemented by Islamic law; this includes social behaviour, as well as the Constitution.

Thus, it can be said that Islam imposes a significant effect on operations and business life, which enhances the placing of ethical standards, human equality and strong beliefs. Therefore, it is important to note that, whenever Saudi Arabia attempts to adopt particular standards, it tends to formulate them in accordance with the Saudi environment and Islamic law in the fields of corporate government practices, accounting and auditing standards (Alharkan, 2005). Saudi Arabia can be said to be a tribal society, in the context of social behaviour and Arabic traditions. Thus, it helps in the maintenance of a reasonable degree of impact on national and local events. Furthermore, Islam has profoundly affected the legal Saudi framework, as the Constitution of the country is based on the principles of Islam. The Kingdom has largely developed its business environment due to the historical relationship between Saudi Arabia and the US and Britain, which have had a significant influence on accounting and auditing standards and companies law (Al-Angari, 2004). Although the regulations are considered to be national standards, they were initially acquired from the principles of the US and Britain. Based on a brief assessment, the legal procedures that are followed by Saudi Arabia are interrelated with
the business environment and are characterised by an admixture of the principles, rules and regulations of British and US legislation. Furthermore, it is controlled by a powerful Islamic framework (Al-Angari, 2004). However, it is to be noted that, even though Saudi Arabia attempts to borrow the legislating standards of the US and Britain, these have to be in line with Islamic law.

2.4 Administrative Bodies of the Firms Listed in Saudi Arabia

2.4.1 Ministry of Commerce and Investment (MCI)

Established in 1953, the ministry’s primary objective is related to the monitoring of commercial activities in the Kingdom of Saudi Arabia. This ministry is also accountable for the initiation of trade policies, along with their implementation. Moreover, the MCI is accountable for the issuing of new regulations and for the maintenance of foreign trade relations. The MCI also facilitates the expansion of the production and export of non-oil products. However, it should be noted that one of the key responsibilities attributed to this ministry is to monitor Saudi companies as well as the Companies Law that was implemented in the country. Before the establishment of the CMA, the MCI was the only regulatory body to manage the affairs of listed firms and their shareholders. However, these duties of supervision of the MCI were transferred to the CMA after the Companies Law was updated in 2015.

2.4.2 Capital Market Authority (CMA)

The CMA began its unofficial existence in the early 1950s and continued its operations until, in the late 1980s, the government of Saudi Arabia set its basic rules and regulations. The Capital Market Authority was established by Royal Decree in 2003, which resulted in the formal existence of the CMA. The CMA is a government organisation, which is given financial, legal and procedural as well as administrative independence as it reports directly to the Prime Minister of the KSA. It became fully independent in 2004. The chief
functions of the CMA include the regulation and development of the Saudi Arabian capital market in accordance with the issues that are required in the implementation of the rules and regulations regarding the provisions of the Capital Market Law. However, it can also be said that another chief objective of the CMA is the creation of an adequate investment environment and the reinforcement of transparency. It also helps and protects investors from illegal acts that take place in the market.

Furthermore, the basic key factor that has an influential effect on the level of investment in Saudi Arabia is mainly concerned with the opportunities and requirements for non-resident and foreign investors, resulting in direct access to the market. It was in August 2008 that both resident and non-resident non-Saudis were allowed to attain Saudi shares through the process of swap arrangements (SFG, 2009). These swap arrangements involve the approval of Saudi brokerage firms that are licensed by the CMA to buy and hold shares on account of foreign customers. It is important to note that the success of swap arrangements has facilitated direct foreign investment in the Saudi Stock Market since 1 June 2015.

It is, therefore, important to understand the major duties that are performed by the CMA. These duties are as follows:

- “To progress and regulate the Saudi Stock Market (Tadawul) and improve standards and transactions.
- To enhance security by protecting investors and the public from unfair, unsound and illegal practices, including fraud and manipulation.
- To improve the efficiency of the market and make transactions of securities more transparent.
- To diminish the risks associated with transactions through the creation of appropriate measures and standards.
- To monitor how committed Saudi listed companies are to disclosing the required information.
- To oversee all activities and transactions on the Saudi market.
- To improve and oversee the issuance of securities and under-trading transactions” (CMA, 2016).
2.4.3 Saudi Arabian Monetary Authority (SAMA)

The central bank of Saudi Arabia came into existence in 1952, established by Royal Decrees issued on 20 April 1952. The first Decree was no. 30/4/1/1046, which established the Monetary Agency of Saudi Arabia. The second Decree was no. 30/4/1/1047, which was the Charter of the Saudi Arabian Monetary Agency. Furthermore, SAMA started practising on 4 October 1952.

SAMA plays a significant role in the unification and improvement of the financial system of Saudi Arabia. Furthermore, it is also to be noted that SAMA has played a major role in creating and paying significant attention to the need for the promotion and improvement of the national banking system in the KSA. SAMA, in its early initiation and continuation over the course of 12 years, which marked the period 1960–1972, concentrated on regulations for enlarging the banking industry and ensuring complete transformation to the national currency of the KSA since March 1961, and its mandate was legalised by Article VIII of the agreements associated with those of the International Monetary Fund (IMF) (SAMA, 2015). In the years 1973–1982, the primary concern of SAMA was to reduce the pressures of inflation on the developing economy of the Kingdom, as well as to expand the banking system to manage the foreign exchange reserves of the Kingdom. Some of SAMA’s duties and responsibilities are as follows:

- “Dealing with the Government’s banking affairs.
- Minting and printing the national currency (the Saudi Riyal), strengthening the Saudi currency and stabilizing its external and internal value as well as strengthening the currency’s cover.
- Managing Saudi’s foreign exchange reserves.
- Managing monetary policy in order to maintain the stability of prices and the exchange rate.
- Promoting the growth of the financial system and ensuring its robustness.
- Overseeing commercial banks and exchange dealers.
- Overseeing cooperative insurance companies and the self-employment professions related to insurance activity.
- Overseeing finance companies.
- Overseeing credit information companies” (SAMA, 2015).
2.4.4 Saudi Stock Exchange (Tadawul)

The stock market of Saudi Arabia, known as Tadawul, was unofficially established in 1935 (Al-Jaser, 2002) and the first joint stock company in Saudi Arabia was the Arabian Automobiles Company (Tadawul, 2012). Although only five companies were listed in 1954, by 1975, the number of businesses had increased by 14 (Al-Barrak, 2005). The number of listed firms continued to grow due to the expansion of the economy of Saudi Arabia by 1975 (Al-Barrak, 2005). This expansion happened because of the rapid rise in the price of oil, along with the Saudisation of the capital present in foreign banks. It was under foreign banks that the shares from foreign investors were bought and the market informally started operations in 1985 (Hussainey and Al-Nodel, 2008). SAMA was ordered by Royal Decree in 1984 to formulate regulations and monitor all the securities activities associated with them (SAMA, 2013). Furthermore, this particular government body was solely responsible for the supervision and determination of the predominant activities taking place in the market before the establishment of the CMA in 2003. This led to the CMA being recognised as the only body of administration responsible for the authorisation of the task of trading securities in Saudi Arabia. Thus, this arrangement constrained the foundation of Tadawul by government initiation on 19 March 2007. The establishment of the Saudi Stock Exchange was a significant improvement in the developing securities market.

On 26 February 2017, Tadawul and the CMA officially launched Nomu, which is an alternative equities market with lighter listing requirements in comparison with the main market. Nomu serves as an alternative platform for publicising companies, although investing in this market remains restricted only to qualifying investors. The primary objective of initiating Nomu is that it acts as an additional source of funds for issuers to access the required amount of capital, along with a rise in the diversification and expansion of the capital market. Another major characteristic of Nomu is the liability of
conversion to the main market after the new filling process along with the CMA. It should be noted that the following regulations are associated with Nomu. The majority of Saudi and Gulf companies are eligible for listing and are owned by nationals. However, a minimum amount of 10 million SR of the capital is to be listed in this market and the public must own at least 20% of the total shares. It is to be noted that, if the market value of a firm’s shares is greater (or less) than 40 million SR, there have to be at least 50 (35) shareholders. The listed companies must operate their main activity for one financial year. Moreover, one year of financial statements is required and these are audited according to the standards issued by SOCPA. In recent years, the government of Saudi Arabia has planned to privatise most of its significant economic sectors, which has encouraged a significant number of family and private companies to go public. Therefore, the number of Saudi listed companies has drastically increased, from 61 in 2004 to 161 by 2014 (Tadawul, 2015). On 31 July 2017, 27.26% of the shares in the main market were owned by individuals, 66.09% by institutions, 2.18% were owned by investors from the Arab states of the Gulf, and 4.47% owned by foreign investors. Thus, it can be said that the main market in Saudi Arabia is institutionally oriented; however, the market has not attracted foreign investors yet, since they possess only 4.47% of the shares.

The Arabic term ‘Tadawul’ initially meant the exchange process of stock in the capital market. It also refers to the Saudi Arabian Stock Exchange as an institution. The authority of Tadawul is administered by a board, which is self-regulating and comprises nine members nominated by the CMA. Three of the nine members are chosen from specified government organisations, namely, SAMA, the MCI, and the Ministry of Finance. Two of the members are appointed from amongst listed companies and the remaining four represent licensed brokerage entities. The Public Investment Fund of Saudi Arabia owns

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Tadawul, which has capital worth 1 billion 200 million SR. The responsibilities associated with this organisation are as follows:

- “To issue and enforce professional standards for brokers and their agents.
- To develop and enhance excellence of service for all customers, including brokers, issuers, investors, vendors, etc.
- To increase and ensure fair and efficient activities in the market.
- To ensure market integrity, quality and fairness.
- To improve the exchange’s capabilities and competencies.
- To support investor education and awareness efforts” (Tadawul, 2015).

2.4.5 Saudi Organisation for Certified Public Accountants (SOCPA)

SOCPA was established in 1991 as a semi-independent authority governed by the MCI. Before SOCPA was founded, the Commercial Business Regulation, which was issued in 1931 by Royal Decree, ordered all firms to have proper maintenance of accounting records. It was in 1965 that listed firms had to start having their financial statements verified by independent external auditors in order to protect their shareholders (SOCPA, 2012). The first Chartered Accountants’ Act was issued in 1974 and acted as an important element in the regulation of the accounting profession in the Kingdom of Saudi Arabia and was formulated under the guidance of the MCI.

SOCPA is managed by its members, who are responsible for the enhancement and promotion of accounting, together with the verification practices of the profession (SOCPA, 2006). The primary responsibilities of SOCPA are to:

- “Review, develop and approve accounting standards.
- Review, develop and approve auditing standards.
- Establish the necessary rules for fellowship certificate examination (CPA exam.) including professional, practical and scientific aspects of audit profession and applicable regulations.
- Organize continuous education programs.
- Establish an appropriate quality review program in order to ensure that Certified Public Accountants implement professional standards and comply with the provisions of Certified Public Accountants Regulations and relevant by-laws.
- Conduct special research work and studies covering accounting, auditing and other related subjects.
Publish periodicals, books and bulletins covering accountancy and audit related subjects.

Participate in local and international committees and symposiums relating to the profession of accounting and auditing” (SOCPA, 2006).

2.5 Companies Law

Companies Law, which was originally based on the British Companies Law, is considered to be a significant element of regulation in Saudi Arabia. It also provides the basis of attempts to formulate rules in Saudi companies. This law was enacted in 1965 by Royal Decree, followed by an update in 2015 (Royal Decree No. M3 dated 28/1/1437H (i.e., 10/11/2015G). The law was published in the Official Gazette on 22/2/1437H (4/12/2015G) and came into force on 2 May 2016. Furthermore, it helped to sustain a basic system for all companies in the Kingdom of Saudi Arabia, as they are obliged to comply with Companies Law.

The above law denominates the MCI as the sole regulator of all companies operating in Saudi Arabia. Listed companies have to comply with the rules and regulations issued by the CMA and Article 219 emphasises that, without prejudice to Companies Law, the CMA is the regulator of listed companies. Under this law, the CMA has enormous powers to regulate listed companies. The CMA also issues rules with which listed firms have to comply in addition to Companies Law, such as corporate governance and merger and acquisition regulations and listing rules. The Royal Decree enacting this law clarifies that the provisions of Companies Law do not apply to the funds and investments of special-purpose entities. Thus, the CMA has the authority to regulate these entities in accordance with the Capital Market Law.

The structure of a company is a large aspect of the determination of its legal position. Article 68 of Companies Law designates that public companies must be administered by a board of directors with a minimum of three members and a maximum of 11. Furthermore, it specifies that the directors must be appointed during the annual general
meeting of the company. Directors should also serve for at least three years, unless the constitutional documentation of the company states otherwise. The law stipulates that the chair must be restricted from holding any executive position in the company. There is also a necessity to appoint a deputy chair. Furthermore, it should be noted that the general meeting of the shareholders has the power to expel a director from the board, if that individual director does not attend three successive meetings held by the shareholders without a valid reason. Any shareholders that possess at least 10,000 shares can nominate him/herself to the board of directors. Under the new law, companies are given the authority to choose an appropriate method of remuneration for the benefit of the board of directors. Remuneration can, for example, be in the form of attendance allowance, a salary and a portion of the income of the company. In addition, the new law makes it compulsory for directors to declare their remunerations received from the company in the board of directors’ report.

Article 133 states that companies need to appoint one external auditor to audit their financial statements. The new law restricts companies from the process of appointing the same auditor for a prolonged period. Thus, in order to reflect global trends for the promotion of fiscal objectivity, an auditor must not be appointed for more than five consecutive years. In such situations, a similar auditor can be appointed at intervals of two years. Furthermore, an external auditor is usually restricted from combining auditing with any other consultancy service, the company’s income tax and Zakat services being an exception. Article 135 also demands that the external auditor report to the annual general meeting of the company. It is important to note that the external auditor may be subjected to five years of imprisonment and/or a fine of 5 million SR for providing misleading or false data in a financial statement. Furthermore, if an external auditor fails to inform a company about violations uncovered during his/her work, the auditor is subjected to one year of imprisonment and a fine of 1 million SR (in some cases, this may
be considered a criminal violation). It is also important to note that the auditor will have to pay a fine of up to 500,000 SR if any breach of Companies Law takes place.

2.6 Accounting and Auditing Standards

In 1986, Saudi Arabia initiated the implementation of national accounting and auditing standards that are based on those of the US. It is to be noted that, before January 2017, all Saudi companies (listed and unlisted) used Saudi national accounting standards, apart from financial companies (banks and insurance companies) (IFRSs, 2010). Financial companies are required by SAMA to use IFRSs. SOCPA is accountable for issuing and enhancing accounting standards, which is achieved through establishing two committees: one for financial accounting standards and the other for auditing standards.

The Committee of Financial Accounting Standards has issued 23 standards that relate to, for example, revenues and expenses recognitions standards, party disclosure, income tax and Zakat, and general disclosure. The Committee of Auditing Standards has issued 17 standards related to external audits.

SOCPA has translated and made some adjustments to the IFRSs, and all listed firms are required, from January 2017, to adopt them. These adjustments were necessary to bring IFRSs in line with laws and regulations in Saudi Arabia. Moreover, SOCPA has adopted IFRSs for small and medium-sized enterprises (SMEs) and all unlisted firms are, from January 2018, required to adopt IFRSs for SMEs.

2.7 Listing Rules

The CMA issued listing rules on 20/8/1425H (4/10/2004G) and amended them on 9/8/1437H (26/5/2016G). Article 5 demands that an IPO (issuer) has “an independent financial advisor and an independent legal advisor”. Furthermore, the firm is required to
prepare a prospectus. It is also important to note that the financial advisor must have a proper licence from the CMA.

Article 11 requires the issuer to prepare at least the previous three years’ financial statements, which must be audited and prepared “in accordance with the accounting standards approved by SOCPA”. Article 13 also requires the issuer to have at least 200 shareholders by the time of listing. It also demands that the public has to attain at least 30% of the shares of the issuer by the time of listing.

Part 8 of this regulation, entitled ‘Continuing Obligations’, consists of 13 articles that deal with the transparency and disclosure in annual corporate reports with the objective of reducing asymmetric information. Furthermore, Article 40 states that firms listed on the stock exchange are subject to informing the CMA and their shareholders regarding any major change in their operations. Thus, it is important to notify the issue on the Tadawul website at least two hours before the first period of trading on the stock market. Thus, the basic purpose of this demand is to create a sense of concern among stakeholders regarding possible impacts on the firm’s assets and liabilities.

Article 42 states that companies need to make both quarterly and annual financial statements, which are to be available on the stock market website (Tadawul) after approval by the board of directors. The CMA makes it clear that financial statements need to be declared within 30 days for quarterly results and three months for annual results. It is important to note that Article 42 requires listed firms to announce their financial statements at least 14 days prior to the general assembly meeting. Article 42 emphasises the independence of external auditors, as it requires listed firms to ensure that there is “no ownership of shares or securities of the firm or any of its subsidiaries”. Moreover, Article 42 states that before publishing, the financial statements of listed firm must be signed by the chief executive officer, the CFO and the authorised director.
When external auditors issue qualified opinions, the firm must disclose the reasons for this and any related information (Article 43). When a firm changes its external auditors before the end of the period for which the auditor is hired, the firm is required to disclose the reasons for this decision.

Article 45 provides proper instruction on the preparation of the report of the public board regarding the ownership of the company by providing the names of those shareholders who are owners of at least 5% of the shares of the company. This regulation applies to both managers and directors, along with outsiders. It is also important to make the shareholders aware of any relevant changes in the ownership during a financial year. Furthermore, the listed firm must send a note to the CMA at the end of the trading day if “the ownership or interest of any of the directors or senior executives of the issuer increasing or decreasing by 50%” (as per Article 45).

The lock-up period for owners for an IPO is six months from the date of trading (Article 49). Article 50 indicates that the directors and senior executives and any person related to them are forbidden from buying or selling the firm’s shares during the following periods:

- “during the 15 calendar days preceding the end of the financial quarter and until the date of the announcement of the reviewed interim financial statements of the issuer; and
- during the 30 calendar days preceding the end of the financial year and until the date of the announcement of the reviewed interim financial statements or the audited annual financial statements of the issuer”.

2.8 Summary

This chapter reveals insights into the background of Saudi Arabia, which was established by King Abdulaziz in 1932. Saudi Arabia is the largest and leading producer of crude oil in the world. Since 2005, the Kingdom has been a member of the WTO. In 2015, it produced 31% of the total oil output for OPEC. By the end of 2016, it had around 22% of the total oil reserves in the world.
The Constitution of Saudi Arabia is based on the principles of the Holy Quran. In terms of the Kingdom’s administrative bodies, the MCI is responsible for issuing and supervising the implementation of Companies Law. The CMA is a government organisation that has the power to issue the regulations and rules that govern the SSM and all listed firms are supervised by the CMA. The financial sectors are supervised by SAMA. Companies Law in Saudi Arabia prevents auditors from combining auditing with any other consultancy service. However, company income tax and Zakat services are exempt from this. Regarding IPOs, listed firms are required to provide financial statements for the last three years, audited according to standards issued by SOCPA.

The following chapter presents the conceptual framework related to earnings management and includes definitions and the types of and motivations for earnings management engagement. It also provides a review of the literature on earnings management in the fields of audit quality and IPOs.
3.1 Introduction

Healy and Wahlen (1999) argue that managers are motivated to manipulate earnings for many reasons, including contracts, regulations, capital markets and initial public offerings (IPOs). According to the literature, earnings management can be seen to fall into three categories, based on the following: accruals, real activities and classification-shifting. Accrual-based earnings management is preferred by managers, as there is no direct impact on cash flow (Roychowdhury, 2006) and it cannot be detected directly (Young, 1999).

This chapter provides a definition of earnings management in section 3.2 and an overview of the types of earnings that may be used by managers to manage earnings in section 3.3. Section 3.4 discusses the cost of earnings management, as past research finds that the manipulation of earnings is not cost-free. Section 3.5 explains why managers are motivated to conduct opportunistic earnings management. An in-depth discussion of the association between earnings management and audit quality is given in section 3.6 and a literature review of earnings management around IPOs is presented in section 3.7. Section 3.8 provides a summary of the chapter.

3.2 Definition of Earnings Management

The literature offers numerous definitions of earnings management. The definition by Healy and Wahlen (1999, p. 368) is commonly cited in the literature and earnings management is stated as occurring

“when managers use judgment in the 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”.

Previous literature finds evidence that is in line with the definition by Healy and Wahlen (1999). For instance, DeFond and Jiambalvo (1994) find that managers engage in
earnings management to evade debt covenant violations. Previous studies (e.g. Balsam, 1998) find that managers engage in earnings management to achieve performance-based compensation.

Another definition commonly cited in the literature is by Shipper (1989, p. 92), who defines earnings management as “purposeful intervention in the external financial reporting process, with the intent of obtaining some private gain”. Rather than managers’ judgement, which encompasses a number of factors, such as experience and qualifications that may have an impact on their judgement, this definition focuses on the intention behind the act. The first definition considers the act of earnings management as being less offensive than the judgements given by accounting standards, whereas the second considers the act of earnings management itself to be offensive, as it emphasises intentions that lead to private gain. The researcher of this study adopts the second definition, as it is a broad one that includes all types of earnings management (see the next section). For example, no element of judgement is included in the accounting standards regarding real earnings management and, therefore, this type is not considered earnings management under the first definition; whereas, under the second definition, this act is considered as earnings management, since the intention is for managers to obtain private gains.

Generally accepted accounting principles (GAAP) require managers to form estimates and judgements to reflect a firm’s underlying economic performance. However, giving an advantage to a firm’s management may create an incentive to misuse this benefit, which is known as opportunistic earnings management. Healy and Wahlen (1999) state that the intentional selection of accounting methods leads to deceiving financial statement users about the real performance of the firm or the gaining of a certain outcome from a contract agreement.
Scott (2009) differentiates between good and bad earnings management. He defines ‘bad’ earnings management as the intervention by management to enhance firm performance and achieve personal gains. In contrast, he argues that the ‘good’ practice of earnings management comes when managers engage in this to disclose inside information to stakeholders about the future performance of the firm. Hence, earnings management may be used as a device to enhance the usefulness of financial statements. According to Qintao (2007), a great deal of literature focuses on opportunistic types of behaviour and motivation. There are a number of types of earnings management that managers are able to use to engage in such activities, which are discussed in the following section.

### 3.3 Types of Earnings Management

Based on previous literature, earnings management falls into three categories: accrual-based earnings management, real earnings management and classification-shifting. The following sections describe these methods in depth.

#### 3.3.1 Accrual-based earnings management

Before discussing the methods available to managers under accrual-based earnings management, it is worthwhile clarifying the difference between non-discretionary (abnormal) and discretionary (normal) accruals. *Non-discretionary accruals* arise from factors over which managers have no control (Jones, 1991). For instance, a growth in sales will raise the balance of accounts receivable and bad debts, even though the credit policy has not changed. In contrast, *discretionary accruals* arise from factors over which managers do have control (Jones, 1991). For example, a manager may over- or underestimate the rate of bad debts for the allowance of doubtful accounts, with the aim of affecting the current reported expenses; any resulting accruals will be discretionary.

Under GAAP, managers are able to manipulate accounting earnings, as they have the choice between accounting policies that treat accounting events differently. For example,
alternative treatments for accounting events can change reported income without any cash flow consequences. According to Teoh et al. (1998b), there are three types of methods available to managers under accrual-based earnings management:

(1) *Accounting method choice*: Under this method, managers can postpone and advance the recognition of expenses and revenues to increase reported income. For instance, a straight line of asset depreciation minimises depreciation expenses in comparison with accelerated depreciation in the early years of depreciation. If a new management wants to delay revenue recognition for ongoing long-term projects to enhance its reputation, the completed-contract method might be used, as, in this method, revenues are recognised only at the completion of a project. In contrast, the percentage-completion method allows revenue recognition as a percentage of the work completed during the reported year.

(2) *Accounting method application/discretionary estimates*: Managers can affect reported income even after the choice of an accounting method via the application of accounting principles. Accounting standards permit managers to exercise their discretion in estimates, such as the salvage values and asset lives of depreciable assets and interest rates capitalised for leases and pensions.

(3) *Accounting method timing*: As managers have discretion over how accounting events are recognised, they also have discretion over when they are recognised. For instance, they have discretion over how much to write off in terms of bad loans and impaired assets.

Extensive studies have examined the engagement in discretionary accruals to manage earnings, such as Healy (1985), Jones (1991), Rangan (1998), Teoh et al. (1998b), Roychowdhury (2006) and Alhadab et al. (2015).
3.3.2 Real activities-based earnings management

Roychowdhury (2006) states that accrual-based earnings management does not have any cash flow consequences, whereas the consequences of real activities-based earnings management have a direct effect on a firm’s current and future cash flows. According to Alhadab et al. (2015), real activities-based earnings management is preferred by managers over accrual-based activities for several reasons. First, accrual manipulations are more likely to come under regulators’ and auditors’ scrutiny. Second, accrual manipulations may lead to potential accounting fraud that exposes the firm’s management to litigation risk. Third, as preceding changes in accounting methods are accumulated in the balance sheet, managers may switch their engagement in earnings management from accruals to real earnings in the current period when accrual earnings are utilised widely in prior periods.

Managers are able to engage in real earnings management through a range of operating decisions. The most common example of real activity is offering a price discount and highly flexible credit terms to customers, mainly towards the end of the year, in order to maximise sales. Dechow and Skinner (2000) consider that a reduction in research and development (hereafter, R&D) expenditures with the intention of reducing current period expenses is a real activities-based earnings management practice. They also mention a variety of activities that are considered real activities, such as delaying maintenance expenditures and altering shipment schedules to affect reported earnings.

A number of studies have examined the engagement of earnings management based on real activities. For example, Bens, Nagar, and Wong (2002) find that firms may reduce R&D expenditures to partially fund stock repurchases. Another study by Roychowdhury (2006) demonstrates that firms can report a lower cost of goods sold (COGS) by offering price discounts to improve profit margins. He also finds that firms engage in a reduction of R&D expenditures to enhance reported profit. Graham, Harvey, and Rajgopal (2005)
interviewed managers of US listed firms, including financial executives, and show that firms engage in earnings manipulation through real activities, such as delaying advertising expenditure. Based on an examination of 138 IPO firms in the UK, Alhadab et al. (2015) find that firms engage in earnings management of both types (real and accrual) during the first year of becoming a public firm. They also provide evidence that IPO firms with a higher probability of IPO failure and a lower survival rate engage in real activities in earnings manipulation. However, Burgstahler and Dichev (1997) find that the use of real activities in manipulating earnings is limited. Roychowdhury (2006) claims that firms engage only in reducing research and development (R&D) expenses as other activities have a little evidence of real activities.

Cohen and Zarowin (2010, p. 3) argue that “real management activities are less likely to be scrutinized by auditors and regulators”. Moreover, external auditors have an obligation to mitigate the misuse of the judgement allowed for firms under the accounting standards. Therefore, this study does not examine the real activities, as the main motivation is to investigate the ban on Deloitte in Saudi Arabia.

### 3.3.3 Classification-shifting-based earnings management

Another channel through which managers can engage in earnings management is classification-shifting-based activities. Managers are motivated to report core expenses as income-decreasing special items in order to inflate core profitability (McVay (2006). Kinney and Trezevant (1997) indicate that market participants pay more attention to ‘core earnings’ than the net income figure. Thus, according to Yun, Barua, Cready, and Thomas (2010), financial statement users are deceived by shifting core expenses within the income statement.

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5 *Core expenses are defined as” the cost of goods sold and selling, and general and administrative expenses.”*
Earnings management has also been investigated by McVay (2006), who finds that, based on the US context, special items include expenses that have been opportunistically shifted from core expenses. Similarly, based on the UK context, Athanasakou, Strong, and Walker (2009) demonstrate that a small part of the core expenses can be reclassified to include other non-recurring items to reduce the gap between reported income and the income expected by analysts. Another study from a UK sample conducted by Zalata and Roberts (2017) finds that UK firms manipulate core earnings by classifying some expenses as non-recurring items, whereas they should classify them as recurring. Moreover, Zalata and Roberts (2016) find that strong internal corporate governance curbs classification-shifting activities, and that firms with more independent directors, long tenure of directors and an effective audit committee can mitigate the engagement of classification-shifting activities. More specifically, they find three characteristics of an audit committee that prevent these activities: the existence of financial specialists on the committee, greater meeting frequency of the audit committee, and the existence of directors with long tenure.

Roychowdhury (2006) and Gunny (2010) argue that, if managers are able to manipulate accruals throughout the year, they may face difficulties in manipulating them when the end of the year approaches. Thus, managers might resort to another channel for earnings manipulation: classification-shifting.

3.4 The Cost of Earnings Management

As noted above, previous literature has indicated that the manipulation of earnings is not cost-free. Roosenboom et al. (2003) contend that accrual-based earnings management will total zero over the long run, as the sum of earnings must equal the sum of cash flow over the life of the business. In addition, abnormal accruals in one period might well be offset by lower-than-normal accruals in subsequent periods (Roosenboom et al., 2003).
Therefore, managers are unable to engage in income-increasing earnings management over long periods without being detected. Graham et al. (2005) argue that aggressive accruals manipulation may attract the attention of board members and external auditors, particularly in a year of change. Another cost of accrual-based earnings management is that accruals earnings reduce future accounting flexibility because, when earnings are overstated in one period, managers have fewer degrees of freedom later (Nam et al., 2014). Short-run earnings improvement by accruals activities may lead to poor performance, as managers may not be able to sustain inflated earnings numbers indefinitely (Roosenboom et al., 2003). Nam et al. (2014) perceive that firms may face a lawsuit filed by investors if any part of the registration statement includes false data or omits information. As a result, as DuCharme et al. (2001, p. 373) argue, “The potential litigation costs are sometimes large enough to even threaten the existence of the litigated”.

According to McVay (2006), the cost of classification-shifting-based earnings management is quite low compared with that of accrual-based earnings management. Nelson, Elliott, and Tarpley (2002) argue that shifting expenses to special items involves no change in the net income reported and future periods will not bear any accruals due to this shift. Thus, external auditors may overlook conducting an examination of this type of earnings management.

Lo (2008) contends that the highest cost of earnings manipulation arises through real activities, as the impact will negatively affect future cash flow. Although real activities-based earnings management is associated with high levels of cost, managers are quite willing to manipulate earnings through real activities, rather than engaging in other manipulation activities (Graham et al., 2005). Roychowdhury (2006) explains that managers are eager to bear such high costs, since accrual manipulations are more likely to come under regulators’ and auditors’ scrutiny. The next section presents the motivations behind engagement in accruals earnings management.
3.5 Motivations behind Earnings Management

As one of the focuses of this study is to examine earnings management around IPOs, the latter being one of many elements that motivate managers to manipulate reported earnings, this section presents an in-depth discussion of the types of motivation involved. Previous literature has listed the incentives that explain why managers are motivated to conduct bad or opportunistic earnings management. According to (Healy & Wahlen, 1999), the main earnings management incentives are as follows:

1. capital market motivations;
2. regulatory and political motivations;
3. management compensation contract motivations; and
4. lending contract motivations.

3.5.1 Capital market motivations

Stock prices might be a strong motivation for managers to manipulate earnings, as reported earnings affect stock prices. Kim and Yi (2006) offer evidence that public firms report higher discretionary accruals than private ones. This finding supports the view that the stock market motivates managers of listed firms to participate in earnings manipulation.

Based on previous studies of capital market motivations for earnings management, the main incentives are as follows: (1) meeting participants’ expectations of the stock market (2) before IPOs or seasoned equity offerings (SEOs) and (3) before acquisitions and mergers. The next sections discuss these incentives.

3.5.1.1 Meeting participants’ expectations of the stock market

Bartov and Mohanram (2004) argue that managers use earnings management as a tool to meet analysts’ predictions. In contrast, Matsunaga and Park (2001) argue that reporting
earnings that are below the benchmark earnings has a highly negative impact on stock returns. Another study conducted by Graham et al. (2005), who interviewed financial executives of US public firms, shows that managers are concerned about not meeting earnings benchmarks, as this may affect their reputation and share prices. The authors contend that managers’ concerns are a strong motivation for earnings manipulation.

Tempting future investors by meeting or beating analysts’ predictions may also inspire managers to manipulate earnings. Managers may engage in earnings management by inflating incomes when these are lower than the expectation, and may engage in earnings management by decreasing incomes when these are above expectations (Koh, Matsumoto, & Rajgopal, 2008).

Daniel, Denis, and Naveen (2008) provide evidence that meeting predicted dividend levels might be a strong motivation to engage in earnings manipulation. Similarly, from 1994 to 2002, UK listed firms conducted earnings manipulation to avoid falling short of analysts’ earnings predictions and having to report negative earnings (Athanasakou et al., 2009). Duncan (2001) provides evidence that there was a 30% decrease in the stock prices of firms that did not meet analysts’ predictions in the first quarter of 2000.

An investigation conducted by Osma and Young (2009) to examine the relationship between earnings benchmarks and R&D expenses changes reports that the probability of a reduction in current R&D spending is high when firms previously failed to meet the earnings benchmark. In addition, they document that firms engaged in a reduction of R&D expenses to meet current earnings benchmarks.

3.5.1.2 Prior to IPOs or SEOs

An enormous body of research provides evidence of managers’ manipulation around listing seasoned (or secondary) equity offerings. The next sections provide a summary of key articles that study earnings management around the issuing of shares.
IPO Motivations

As the initial stock price of an IPO relies on pre-IPO financial statements, the incentive to manage earnings before going public to price the initial stock offering as high as possible is significant. Aharony et al. (1993) contend that managers of IPOs engage in opportunistic behaviour to maximise the proceeds from the initial offering. Moreover, Neill et al. (1995) consider the association between the price of the initial offering and the selection of accounting methods that inflate asset and income values and provide evidence that a positive relationship exists between them. (Section 3.7 provides an in-depth literature review, as the focus of this study is on earnings management around IPOs.)

SEO Motivations

Issuing SEOs may motivate a firm’s management to engage in opportunistic earnings behaviours. According to Rangan (1998), a firm’s management will manipulate earnings upwards in favour of current shareholders, as this will increase the market value of the firm. Rangan (1998) contends that manipulating earnings upwards before SEOs may have a negative impact on stock prices in subsequent periods, as discretionary accruals earnings management will reverse in subsequent years, which may result in lower future earnings and lead to lower stock prices. Consistent with the results obtained by Rangan (1998), Teoh et al. (1998a) examined 1,265 US SEO issuers from 1976 to 1989. They report that SEO firms with a higher income growth in the year of issue showed significant underperformance in the following periods compared with non-issuing firms within the same industry.

As Ritter (1984) argues, earnings are a significant factor in determining the value of firms with IPOs. Yongtae and Myung Seok (2005) hypothesise that SEO firms aggressively engage in earnings management to inflate their offer prices, which directly affects the
issuer’s wealth. They find a negative relation between SEO underpricing\(^6\) and discretionary accruals, indicating that seasoned equity issuers actively engage in earnings management, as well as inflating the offer price to increase offering proceeds.

Cohen and Zarowin (2010) argue that managers may also manipulate earnings through real earnings management activities. They find subsequent underperformance of issuing firms due to real and accrual earnings management activities. However, Roychowdhury, Kothari, and Mizik (2012) find an overvaluation of SEOs due to engagement in real earnings management activities. Thus, the underperformance of SEO firms is caused by real earnings management, not accruals activities.

In an attempt to examine the effect of underwriter choice on the existence of earnings management around SEOs and post-issue performance, Jo, Kim, and Park (2007) determine that a negative relationship exists between underwriter reputation and earnings manipulation. Furthermore, Yongtae and Myung Seok (2005) suggest that issuers with less intention of manipulating earnings hire high-quality underwriters who care about their reputations; they restrict firms’ incentives to engage in earnings management, as they wish to avoid potential litigation risks. These researchers also emphasise that firms that hire high-quality underwriters exhibit better operating performance compared with firms that hire low-quality underwriters.

Although Shivakumar (2000) identifies high abnormal accruals before SEOs, he contends that managers are motivated to engage in earnings management because investors expect them to do so. In addition, a firm’s management is unable to signal the absence of earnings management, as investors would doubt management information related to future earnings.

\(^6\) Defined as" the offer price less the closing price on the offer date".
3.5.1.3 Acquisitions and mergers

Erickson and Shiing-wu Wang (1999) suggest that a stock swap option in acquisitions and mergers may motivate the acquiring firm to engage in opportunistic earnings management to sustain a high stock price, as this will avoid the dilution of voting rights and lower the cost of acquisition or merger transactions. Based on an examination of 55 firms, they find that acquiring firms manipulate earnings upwards prior to a merger announcement and that the proportion of earnings management is associated with the size of the merger deal. They also find no evidence of earnings management when cash is part of the merger deal.

Consistent with the results obtained by Erickson and Shiing-wu Wang (1999), Louis (2004) finds that acquiring firms manipulate earnings upwards in the quarter before the announcement of a merger. He also compares cash and stock-for-stock acquisition in terms of post-merger performance, finding that firms with a cash merger perform better than stock-for-stock acquisition firms because of the presence of earnings management in the latter.

In an attempt to establish whether pre-merger earnings management may lead to lawsuits, Gong, Louis, and Sun (2008) examine the association between post-merger lawsuits and the level of earnings management. They find that the potential for post-merger lawsuits is positively correlated with the pre-merger earnings management level.

3.5.2 Regulatory and political motivations

Governments and politicians may motivate managers to manage their firm’s earnings in response to regulations. Firms may manage earnings downwards or upwards to avoid interference or the costs imposed by government. One of the common motivations for manipulating reported earnings downwards is to reduce tax expenses (Watts & Zimmerman, 1990). For example, 2,044 small Greek firms are found to manage their reported profit downwards to reduce income taxes (Spyros, 2004). Similarly, Russian
companies managed their profits downwards in 2001 and 2002 to lessen income taxes (Goncharov & Zimmermann, 2006). Firms may also take advantage of a new regulation, as Jones (1991) shows in her study. She finds the downward management of earnings during the year of import-relief investigations by the US International Trade Commission (ITC) in order to benefit from import-relief regulations.

Political reasons may also create a motivation for managers to manipulate reported earnings, as argued by Verbruggen, Christaens, and Milis (2008) and Watts and Zimmerman (1990). Few studies have, however, been conducted on this topic. Nevertheless, Ramanna and Roychowdhury (2010) examine firms linked to US congressional members in the 2004 elections. They find that firms that previously contributed to a congressional candidate campaign managed their earnings downwards to manage the political cost.

3.5.3 Management compensation contract motivations

According to Scott (2009, p. 356), “an executive compensation plan is an agency contract between a firm and its managers”; in entering into such a contract, managers act as agents in trying to transfer wealth to themselves from the principal. Thus, managers are expected to be involved in earnings manipulation to maximise their own profit, which is often based on the firm’s performance (Beneish, 1997). Compensation plans are often associated with reported earnings and share price as measures of a firm’s performance (Scott, 2009).

A number of studies have provided evidence that managers are involved in earnings management to maximise their own wealth. Healy (1985)’s study was the first to be conducted on this topic. Healy argues that enhancing a compensation plan might be a strong motivation for manipulating earnings, as he finds a statistically significant association between discretionary accruals and the existence of a compensation plan. Likewise, Dye (1991) suggests that attaching accounting figures to a compensation plan is the main incentive for opportunistic earnings management. A compensation plan might
be a strong motivation for managers to manipulate the time of release of good or bad news to the market (Baker et al., 2003). Therefore, managers can use the release time of bad news as a tool to minimise their exercise price.

DeAngelo (1988) argues that managers engage in opportunistic earnings management to retain their positions by reporting steadily growing earnings to convince shareholders that they are performing efficiently.

3.5.4 Lending contract motivations

Creditors usually impose restrictions on long-term lending contracts to protect themselves from firm management actions that might conflict with their interests. These restrictions aim to prevent actions by managers that may weaken the immunity of existing creditors through excessive payment of dividends, additional borrowing or share buybacks (Scott, 2009). In addition, debt agreements have terms and conditions that restrict investment in other firms, asset disposal, mergers and minimum levels of working capital (Watts & Zimmerman, 1990).

Recent studies have shown that debt covenants are often used (Roberts & Sufi, 2009a, 2009b). The violation of debt agreements and covenants may lead to what is called a technical default, which may result in debt repayments, a higher interest rate or debt agreement negotiation (Watts & Zimmerman, 1990). Beneish and Press (1993) offer evidence that, on average, the interest cost increases by 0.84–1.63% of the market value of the firm’s equity because of refinancing. They also find that when firms violate debt covenants, they face more control from creditors. Surprisingly, Matsumoto (2002) argues that debt violation may lead to a reputation loss, which can, in turn, affect share price. Thus, managers are motivated to manipulate earnings to avoid costs that may be incurred for breaching debt agreements and covenants, according to Scott (2009) and Beneish (2001).
A large and growing body of literature has investigated earnings management in a debt-covenant context. DeFond and Jiambalvo (1994) provide evidence of earnings manipulation one year prior to a covenant violation by the increase of reported earnings using discretionary accruals. In addition, it is found that firms engage in earnings manipulation to lower the cost of additional borrowing and to avoid debt covenant restrictions (Dechow, Sloan, & Sweeney, 1996). Nini, Smith, and Sufi (2009) highlight that managers make accounting choices to improve firm performance that is within or below covenant thresholds. Likewise, Jaggi and Picheng (2002) highlight that managers of firms that are in financial distress engage in income-increasing discretionary accruals when they are capable of obtaining waivers for debt covenant violations; moreover, managers engage in income-decreasing discretionary accruals when they are negotiating debt restructuring when waivers are rejected.

According to Easton, Eddey, and Harris (1993), nearly 40% of Australian chief financial officers (CFOs) admit to engaging in asset revaluation with the intention of lowering the debt-to-equity ratio and satisfying their debt agreements. In addition, it has been statistically demonstrated by Cotter and Zimmer (1995) that firms resort to revaluing assets when facing a shortfall in cash flow.

### 3.6 A Review of the Literature on Earnings Management and Audit Quality

Audit quality is defined by DeAngelo (1981) as the possibility that the auditor will detect and report errors in financial statements. Higher audit quality implies an auditor’s capability to observe misstatements in financial statements and a higher likelihood of detected errors being reported. A high-quality audit comes with a cost, as Craswell, Francis, and Taylor (1995) find that large audit firms demand higher fees and use part of the audit fee premium to invest in auditors with the expertise to discover errors in financial statements.
Balsam, Krishnan, and Yang (2003) argue that there is no single auditor characteristic for observing audit quality. Hence, a large number of studies examine different aspects of the association between earnings management and audit quality, including auditor tenure or rotation, auditors’ industry expertise, auditor fees and auditor type or size. The following is an overview of previous studies in this regard.

Auditor tenure is the number of consecutive years that a firm is retained as auditor. An in-depth understanding of a firm’s system might allow the auditor to detect the firm’s specific risks and the proper audit procedures for detecting earnings management. Previous studies find a relationship between audit quality and auditor tenure. Johnson, Khurana, and Reynolds (2002) investigate the linkage between the number of years that a firm retains an auditor and the financial reporting quality in the firms audited by the Big 6 from 1986 to 1995. The researchers use absolute discretionary accruals to proxy the quality of financial reporting. To do so, they create three variables: short tenure (two to three years), medium tenure (four to eight years) and long tenure (nine years or more). The level of absolute discretionary accruals is only statistically significant with short tenure. However, the researchers do not provide any justification for these arbitrary classifications.

Myers et al. (2003) examine the association between auditor tenure and earnings quality in response to calls for ‘mandatory auditor rotation’, using discretionary accruals and current discretionary accruals as proxies for earnings quality. They find that discretionary accruals and current discretionary accruals are lower with longer auditor tenure. Hence, they conclude that long tenure has no impact on audit quality. However, they state that the result does not suggest that retaining the same auditors would improve audit or

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7 Audousset-Coulier, Jeny, and Jiang(2016) examine 30 industry specialist auditor proxies and conclude that the classification of individual auditors as specialists in the industry is based on the proxy used.
earnings quality. As they provide evidence that both auditor type and tenure mitigate long and current discretionary accruals, they added a variable to interact between non-Big auditors and tenure. They state that “the number of new auditor-client combinations for Big N auditors is 3,590 versus 1,561 for non-Big N auditors” (P.784); therefore, Big auditors may lead the result for tenure, as around 70% of the sample was audited by them.

Using firms audited by the Big 6 from 1989 to 1998, Balsam et al. (2003) examine the association between the level of absolute discretionary accruals and auditors’ industry expertise. They find absolute discretionary accruals are low when firms are audited by industry-expert auditors. Another study consistent with the results obtained by Balsam et al. (2003) is by Krishnan (2003a), who finds absolute discretionary accruals are high when firms are audited by non-industry-expert auditors. A recent study by Yuan, Cheng, and Ye (2016) explores whether there is any association between the client’s business strategy and the auditors’ industry expertise, based on 12,253 observations of Chinese firms for the period from 2000 to 2010. They find an association between audit quality and earnings management, especially when the client’s business strategy is different from the industry standards. This deviation influences audit quality by moderating the role of the auditor in providing high audit quality.

Jong-Hag, Jeong-Bon, and Yoonseok (2010) argue that auditors who are paid more than the normal audit fees by their clients may allow the financial statements to be substandard. They believe that auditors are willing to bear the costs associated with substandard statements to retain profitable clients. Absolute discretionary accruals are proxies for audit quality. After examining 7,061 observations in the US for the years from 2000 to 2004, they find that a negative association exists between audit quality and positive abnormal audit fees, whereas the relationship between audit quality and negative abnormal audit fees is statistically insignificant. They believe that this study explains why prior studies provide mixed results, as the association between audit quality and audit fees
depends on an indication of abnormal audit fees. They strongly believe that examining the relationship between audit quality and audit fees without partitioning the sample according to this indication may lead to finding an insignificant relationship between audit quality and audit fees.

Nevertheless, none of the audit-quality proxies referred to above are appropriate to answering the research question. Banning Deloitte from carrying out any audit work for listed firms for two years implies that Deloitte’s audit quality was lower than the other Big 4 firms and raises a further question about the other four firms. Thus, audit firm type is chosen to be used in this study, as DeFond and Zhang (2014) state that the strength of using Big N as a proxy for audit quality is “its relatively high construct validity” (P.289). They also believe this type of measurement is the most valuable for studies examining “the client's demand for audit quality” (P289).

Using audit size as a proxy for audit quality is not new in the literature. For instance, Boone, Khurana, and Raman (2015) use this kind of proxy to investigate the disciplinary order against Deloitte by the Public Company Accounting Oversight Board (PCAOB) in the US. As the focus of this study is on audit firm type as a proxy for audit quality, prior studies are covered in depth below.

A considerable amount of literature uses audit firm type as a proxy for audit quality. DeAngelo (1981) argues that opportunistic behaviour is less and perceived audit quality is high with a large auditor size, as these firms have stronger motivations and higher levels of competence.

Becker et al. (1998) investigate the association between audit quality and earnings management by examining 10,379 firms audited by the Big 6 and 2,179 firms audited by non-Big 6 firm-years in the US. They find that firms audited by non-Big 6 auditors report higher discretionary accruals than firms audited by the Big 6. The study concludes that
the Big 6 auditors provide a higher quality of audit than non-Big 6 firms and indicate that higher audit quality is related to less “Accounting flexibility”. However, they do not provide any analysis of signed discretionary accruals. Big 6 firms may constrain earnings only when firms manage earnings upwards, as the result shows a negative significant association between discretionary accruals and the dummy variable of the highest 10% of leverage. This strong negative association between them coincides with the opinion of DeFond and Jiambalvo (1994), who argue that firms with high leverage engage in income-decreasing to benefit from debt agreement renegotiations.

Francis et al. (1999) examine whether firms with a tendency to produce accruals are more likely to be audited by Big 6 auditors. Using a sample from 1975 to 1994, they argue that such firms have a motivation to choose one of the Big 6 to add assurance to the earnings reported. They find that the probability of hiring the Big 6 auditors is increased with a tendency to generate accruals. They also find that firms audited by the Big 6 report lower discretionary accruals, although the level of total accruals is high in firms audited by the Big 6. They conclude that a constraining of aggressive reporting of accruals is associated with Big 6 auditors.

Based on a sample consisting of 367 IPO firms between 1999 and 2002 in Taiwan, Vinten, Chen, Lin, and Zhou (2005) find that Big auditors constrain accruals earnings management for Taiwan IPO firms. They use Big 5 versus non-Big 5 and industry specialists to measure audit quality. As the literature shows both brand name and industry specialists mitigate earnings management, and both are used as proxies for audit quality, using both in one model may lead the proxies to influence each other. For example, Krishnan (2003a) and Balsam et al. (2003) examine industry expertise within the Big 6 audit firms.
Consistent with the results obtained by Vinten et al. (2005), Alhadab, Clacher, and Keasey (2013) find that Big N auditors mitigate real and accrual-based earnings management when they examined 515 IPO firms from 1998 and 2008 on the London Stock Exchange. Using a sample of 6,568 US firm-years from 2003 and 2005, Francis and Yu (2009) find that Big 4 office size provides higher-quality audits. They argue that the probability of issuing going-concern audit reports is high with Big 4 offices. They also argue that opportunistic earnings management behaviour is less when firms are audited by a Big office.

Khalil and Ozkan (2016), in their examination of 6,568 Egyptian firm-years from 2005 and 2012, find that earnings management magnitude is less when firms are audited by the Big 4. Other related studies include that of Alzoubi (2016), who aimed to study the relationship between earnings management and the Big 4 as a proxy for audit quality in the Amman Stock Exchange for the years 2007–2010. He provides evidence that incentives for mitigating discretionary accruals exist in firms audited by one of the Big 4 in Jordan. He concludes this finding after examining 86 firms in the industrial sector. This result cannot, however, be generalised to other sectors and, therefore, other non-financial sectors need to be examined before generalising the finding to an entire market. However, Idris (2012) finds that the Big 4 mitigate earnings management with income-decreasing activities.

Zhou and Elder (2001) examine the association between the engagement of earnings manipulating and audit quality. They measure audit quality using two proxies: industry specialisation and audit size. From a sample containing 1,048 observations for the years 1996–1998, they provide evidence that the two proxies they use mitigate earnings management in pre-IPO year. However, they use the two proxies in an empirical analysis of the sample, which leads to an inaccurate result as the proxies may have interacted with
each other. For example, Krishnan (2003a) and Balsam et al. (2003) examine industry expertise within Big 6 audit firms.

In an attempt to examine the impact of Big 4 auditors on the existence of earnings management in private firms in European countries, Van Tendeloo and Vanstraelen (2008) provide evidence that the engagement of earnings management is less when firms are audited by one of the Big 4.

Ming Chia, Lapsley, and Lee (2007) also examined the role of the Big 6 in Singapore in mitigating earnings management in the service sector during the Asian financial crisis for the period 1995–1998. After examining 318 observations, they provide evidence that the Big 6 constrained earnings manipulation activities in the service sector.

A sample of 100 firms from 2009 to 2013 was drawn from Tehran listed firms by Rad, Salehi, and Pour (2016), who provide evidence that auditor reputation and tenure have a positive effect on curbing discretionary accruals. However, they do not provide a clear explanation of auditor reputation and whether this relates to local or international standing. Iran was under economic sanctions at the time examined by the study and, therefore, the Big 4 auditors that are known internationally did not operate in Iran. The methodology for identifying auditor reputation is not given. Moreover, the researchers do not include a variable that interacts between auditor reputation and tenure, as the result provided for the tenure variable might be driven by reputable auditors.

Cahan and Zhang (2006) offer evidence that Big 4 auditors that acquired clients from Arthur Andersen in 2002 after the Andersen crisis in 2001 reported lower, and a major reduction in, discretionary accruals. The researchers reached this conclusion after examining 1,639 observations. However, they mention that the result was very strong with Ernst & Young’s clients, which may have driven the result for this finding. In other words, this finding may not be applicable to all Big 4 firms. Similar evidence is also found
from 856 observations made by Krishnan (2007), who applies four measures to examining earnings conservatism for clients of Arthur Andersen who switched to one of the Big 4 auditors in 2002. Regarding accruals earnings conservatism measurement, the study concludes that “the asymmetric timely recognition of losses via accruals has increased following the auditor change only for former Andersen clients” (Krishnan, 2007, p. 159). Other related studies include that of Krishnan and Visvanathan (2008), who examine clients of Arthur Andersen and their engagement in earnings management compared with the other Big 5 firms from 1996 to 2000. From a sample of 6,027 observations, they provide evidence that clients of Arthur Andersen aggressively participated in earnings management. Using a sample of 663 former Andersen clients from 2001 until the end of 2002, Lai (2013) finds that Big 4 firms curbed the level of discretionary accruals in these clients, compared with non-Big 4 firms that audited former Andersen clients.

Houqe et al. (2017) studied the impact of audit quality on earnings management from a sample drawn from firms in India. Based on an examination of 7,303 observations for the period from 1998 to 2009, they document that Big 4 firms curbed positive earnings management (income-increasing).

Although a large number of studies provide evidence of the presence of Big auditors curbing earnings management, other studies provide findings of no impact on earnings manipulation. Piot and Janin (2007) offer evidence that Big 5 audit firms do not mitigate earnings management in France. Studying a sample drawn from firms in Portugal, Alves (2013) finds that Big 4 auditors are positively associated with earnings management. However, she finds that Big 4 auditors constrain earnings management when an audit committee exists.

For a US sample taken from 2005 to 2010 consisting of 5,709 observations, Boone et al. (2015) examine the audit quality of Deloitte compared with the other Big 4 before and
after the disciplinary order against Deloitte by the PCAOB. They examine audit quality three years before and after the order and find no evidence that Deloitte audit quality differed from the rest of the Big 4, either before or after the order.

A sample was drawn from manufacturing industry firms listed on the Istanbul Stock Exchange from 2003 to 2007. In the study, Yasar (2013) argues that the general notion that Big 4 auditors provide high-quality audits does not exist in Turkey, as he believe that there is no oversight mechanism for auditors. He finds that Big 4 auditors do not constrain earnings management.

Other related studies include that of Tsipouridou and Spathis (2012), who aimed to examine the association between earnings management and auditor reporting (measured by audit firm size among the Big 4) in the Athens Stock Exchange after adopting international financial reporting standards (IFRS) for the years 2005–2009. They provide evidence that the incentives for mitigating discretionary accruals are limited in both Big 4 and non-Big 4 auditors in Greece.

Huguet and Gandia (2016) examine audit quality in small and medium-sized enterprises (SMEs). From a sample of 34,562 Spanish SMEs, they find that firms that that volunteer to have their financial statements audited report lower discretionary accruals than firms that do not have their financial statements audited. They also find that Big 4 firms do not mitigate earnings manipulation in Spanish SMEs.

Based on a sample of 337 observations from the SSM from 2006 to 2009, Habbash and Alghamdi (2016) argue that the role of the Big 4 in mitigating earnings management does not exist in Saudi Arabia. However, they do not mention the minimum number of observations in each industry per year required to run Kothari et al. (2005) estimation model, as some sectors in the Saudi capital market have fewer than six firms, and must be excluded to meet the minimum number of observations required by the literature.
(e.g., DeFond & Jiambalvo, 1994). For example, in 2009, the telecommunications sector in Saudi Arabia had four firms, the hotels and tourism sector had three firms, the power sector had two firms, media and publishing had three firms, and the transportation sector had four firms. The researchers also include the real estate sector, which is considered to be part of the financial sector in all international industry classifications (e.g., the Industry Classification Benchmark). Therefore, the researcher of the current study has concerns regarding the accuracy of estimating discretionary accruals, which also leads to concerns regarding the results provided. The researchers also include five proxies for audit quality in one model: Specialised auditor, Audit delay, Auditor change, Auditor opinion and BIG4 auditors. Using these proxies in one model may lead the proxies to influence each other.

Another sample was drawn from the SSM by (Gomaa, 2013), who examines the impact of audit quality (for both external and internal audits) on earnings management. He uses a mixed-methods approach, i.e., quantitative and qualitative. He measures the audit quality of an external audit using two proxies: auditor size and auditor industry specialisation, whereas he measures internal audit quality using a questionnaire. Six measures are used in the questionnaire: internal auditor experience; the number of professional certification holders in the internal audit department; training hours compared to working hours; the independence of the internal auditor (‘1’ if he/she reports to the audit committee); the number of hours that the internal auditor spends in work related to the financial reports; and the size of the internal audit department. He finds that auditor size (BIG 4) has no impact on minimising engagement in earnings management. Conversely, earnings management is mitigated when a firm is audited by specialists in the industry. He also finds that the experience, qualifications and independence of the internal auditor curb earnings management. However, he included audit firm size and
auditor industry specialisation in one empirical analysis, which are used in the literature as substitutes for each other. This may lead the variables to interact with each other.

Alabbas (2008) finds no role of the Big 4 in mitigating earnings management in the SSM. He examines 241 observations from 2002 to 2006. However, he uses univariate analysis (a t-test for the difference between two means) instead of multivariate analysis to draw his conclusion, which leads to weak results. Using multivariate analysis allows the researcher to use control variables that explain variation in the dependent variable rather than the main variable. Consequently, the result of this study cannot be relied on.

After examining 2,117 firm-year observations in the Korean Stock Market during the period from 1994 to 1998, Jeong and Rho (2004) find that audit firm size, as a proxy for audit quality, does not have an impact on discretionary accruals. In addition, they provide evidence that there is no difference in discretionary accruals between firms that switch from non-Big 6 to Big 6 auditors and firms that switch from Big 6 to non-Big 6.

Bauwhede, Willekens, and Gaeremynck (2003) investigate the role of Big 4 auditors in Belgian firms. After examining 62 firms (both public and private) for the period from 1991 to 1997, they find that there is no role for the Big 4 companies when the profit of the firm is below the target profit. They argue that the Big 4 do not pay attention to earnings management in these cases, as the litigation risk in Belgium is low.

Haniffa et al. (2006) find that the presence of Big 5 auditors does not curb the existence of earnings management in Malaysia. They use the Big 5 as a control variable for the reduction of earnings management when they investigated the linkage between corporate governance characteristics and earnings management.

3.6.1 Critical evaluation of the literature on earnings management and audit Size

In light of the studies stated above, the role of Big N auditors in mitigating discretionary accruals is still arguable, especially in developing countries. Some studies in developing
countries find a positive role of Big N auditors in constraining discretionary accruals (e.g. Khalil & Ozkan, 2016; Vinten et al., 2005). Other studies in developing countries find no role for Big N auditors in constraining discretionary accruals (e.g. Tsipouridou & Spathis, 2012; Yasar, 2013). Even within the same country, the results are contradictory. For example, in Jordan, Alzoubi (2016) provides results that are counter to the finding of Idris (2012). Moreover, the results differ within developed countries. For instance, Piot and Janin (2007) find no role for the Big N in France. It is also clear from the mixed results mentioned above that these differ between legal and institutional environments. Habbash and Alghamdi (2016) argue that the findings from developed countries cannot be generalised, as Saudi Arabia has a weak and less-well-developed stock market and local accounting standards are applied.

As a result of the weakness in the methodology of studies conducted in Saudi Arabia and the issue of the banning of Deloitte, this study re-examines the role of the Big 4 in curbing engagement in earnings management for large samples. Considering the weakness in the methodology of prior studies, the banning of Deloitte raises a question about the role of the rest of the Big 4 auditors. It also raises a question of whether Deloitte’s clients managed earnings compared with companies audited by non-Deloitte accounting firms. To the best of the researcher’s knowledge, no such study examines this ban in Saudi Arabia.

3.7 A review of the Literature on Earnings Management and IPO

While examining earnings management practice before going public is challenging, a considerable body of literature observes this phenomenon. A study of 277 US IPO firms by Friedlan (1994) indicates that IPO firms engage in income-increasing discretionary accruals in a pre-IPO year. It also reports an extreme case of turning losses into profits.

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8 As mentioned in the previous chapter, Saudi Arabia has adopted IFRSs since 1 January 2017.
using discretionary accruals. Another study of 682 US IPO firms by Jain and Kini (1994) provides evidence that firms take part in window dressing in pre-IPO years to make them appear promising by improving operating performance prior to offerings.

Teoh et al. (1998b) argue that IPO firms are exposed to earnings management as a result of the information asymmetry that exists between investors and the issuers of IPOs. They also demonstrate that the earnings of IPO firms are managed upwards in pre-IPO years to enhance the terms that are required to sell their shares publicly.

Another study that examines the presence of earnings management around IPOs is that of DuCharme et al. (2001). These researchers show a negative association between the existence of discretionary accruals (in the year before an IPO and the year of the IPO) and subsequent stock returns. They also reach the conclusion that the aggressive use of discretionary accruals leads to a sharp drop in investors’ future returns. Having studied 56 Finnish IPO firms, Spohr (2004) argues that the performance of individual firms is lower than that of institutional firms, as earnings are managed upwards in pre-IPO years. Spohr (2004) further supports the claim that there is a high probability of managing earnings upwards amongst single-owner entrepreneurs.

Based on an examination of 58 Danish IPO firms from 1984 to 1996, Gramlich and Sorensen (2004) argue that firms that voluntarily announce earnings forecasts to investors engage in earnings management to minimise the difference between the forecast and reported earnings. They demonstrate that Danish IPOs engage in earnings management to meet forecast earnings. Earnings management in the voluntary earnings forecast context has also been investigated by Mashayekhi and Azar (2008), who find that 90 Iranian IPO firms managed earnings upwards to meet the level of earnings that were voluntarily forecast while going public.
Alhadab et al. (2015) investigate the possibility of failure and the ability to survive of IPO firms after going public as a result of real earnings manipulation in UK firms from 1998 to 2008. They report that IPO firms engaged in upwards earnings management, both real and accrual-based, during the IPO year. Moreover, they provide evidence that a positive relationship exists between engagement in earnings manipulation during an IPO year (both real and accrual-based) and the possibility of failure and an inability to survive.

A recent study by Gao et al. (2017) examines the impact of institutional investors on the offer price of Chinese IPOs for the period from 2010 to 2012. Chinese law requires institutional investors to price the IPO firm in which they are willing to invest. Based on a sample of 472 firms, the researchers provide evidence that there is a negative correlation between discretionary accruals in the year before an IPO and the price offered by institutional investors. They argue that the investors are aware of the earnings manipulation as they offer a lower price. In relation to a sample drawn from Chinese SMEs, Gao, Cong, and Evans (2015) conclude that these firms engaged in earnings management in pre-listing years, which leads the stock to show poor performance in the market.

To establish whether group affiliation in Asian countries has an impact on pre-IPO discretionary accruals, Kouwenberg and Thontirawong (2016) examine 1,427 firms that went public from 2001 to 2010. The research provides evidence that the level of discretionary accruals in IPO firms that are considered to have group affiliation is lower compared with other IPO firms. They state that less engagement in earnings management by group affiliation is driven by the ease of raising funds compared with a state of non-group affiliation.

9 The researchers define group affiliation as “a firm being a member of a business group”.
10 These countries are “Hong Kong, India, Indonesia, South Korea, Malaysia, The Philippines, Singapore, Taiwan, and Thailand”.

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Lo, Wu, and Kweh (2017) examine the impact of institutional investors on earnings manipulation during IPO events and argue that institutional investors are motivated to facilitate engagement in earning manipulation to maximise their wealth. They examine a large sample of IPOs from 1990 to 2013 and their findings support their argument, as they find that institutional investors facilitate engagement in discretionary accruals in pre-listing years. However, they find that institutional investors also play a role in mitigating engagement in earnings management.

Gounopoulos and Pham (2017) investigate whether IPO firms rated by a credit rating agency engage in earnings management. They argue that credit rating agencies have the ability to uncover misbehaviour conducted by firms’ management due to their experience and concern for their own reputation. Moreover, the researchers contend that litigation risks motivate credit rating agencies to monitor and examine any misreporting activities in great depth. After examining 2,602 IPO firms for the period from 1991 to 2011, they find that when IPO firms are rated by one of the agencies, the engagement in earnings management is less in the year of an IPO.

Based on a sample of 226 firms in the US from 1990 to 2009, Chahine, Mansi, and Mazboudi (2015) examine the association between media coverage and earnings management in pre-IPO years in the case of an equity carve-out (ECO). Their results show that a negative association exists between media coverage and earnings management in the years before an equity offering. However, when they distinguish between informative and uninformative news, they find that the negative association exists only with informative news.

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11 An equity carve-out occurs when a firm sells part of its subsidiary to outside investors.
Another study that examines earnings management engagement around IPOs is that of Rakhman (2013), who examines 168 Indonesian IPO firms from 1999 to 2012 and contends that IPO firms engage in income-increasing activities in the two years before an IPO. The study also provides evidence that IPOs inflate the discretionary accruals in the year they go public.

A recent study by Shette, Kuntluru, and Korivi (2016) examines 150 Indian IPO firms from 2001 to 2006 and investigates discretionary accrual levels in IPOs for the seven years from an IPO year. They use discretionary accruals as a proxy for earnings quality and find that earnings quality in years subsequent to the IPO year are higher than in the year of the IPO.

After examining 68 Kuwaiti IPO firms from 1997 to 2007, Algharaballi (2012) finds that firms engaged in earnings management in the year before going public. Using a sample of 568 French IPO firms for the period from 1995 to 2008, Miloud (2014) finds that IPOs in France managed earnings in both the year before and the year of the IPO. From a sample of 59 Egyptian IPO firms for the period from 1995 to 2000, Kamel (2012) provides evidence that IPO firms that were entirely owned by private investors engaged in earnings manipulation in the pre-IPO year, whereas IPO firms owned by the Egyptian government did not engage in earnings manipulation in the pre-IPO year.

Cotten (2008) provides evidence that US IPO firms engaged in earnings management. He divided his sample into three sub-samples: firms that issued primary shares, firms that issued secondary shares, and firms that issued a combination of primary and secondary shares. After examining 3,476 firms from 1988 to 2002, he finds that firms that issued primary and secondary shares engaged in earnings manipulation, whereas no engagement

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12 Cotton (2008) defines primary shares as “The shares issued by the company” and secondary shares as “the shares sold by the insiders” (p. 90).
in such activities is found in firms that issued a combination of primary and secondary shares.

Buchner, Mohamed, and Saadouni (2017) argue that UK IPO firms that provide earnings prediction in their prospectuses were less likely to manage earnings post-IPO. From a sample of 368 IPOs for the period from 1985 to 2012, they find that UK IPO firms that did not provide any earnings forecast engaged in earnings management after an IPO event. Furthermore, they find evidence to support their argument.

Although a number of studies have provided evidence of a manipulation in earnings around a listing, others find no evidence for such manipulation. The latter relies on the hypothesis that issuers make a great effort to maintain high-quality financial reporting in their prospectuses, and thus use conservative accounting methods.

Armstrong et al. (2015) argue that studies that examine earnings management in the context of an IPO ignore one important factor that may lead to an inflation of the accruals during the IPO stage: they state that IPOs report higher accruals in an IPO year due to the capital raised during the IPO stage. To test their claim, the researchers re-examined US data from 1987 to 2006 by controlling for the amount that IPOs received to raise their capital. Their results are inconsistent with prior studies that claimed IPOs engage in opportunistic behaviours to inflate their earnings. They find that, without controlling for the amount that IPOs received, the results show that IPOs inflate their earnings. However, when they controlled for the proceeds, the results show that earnings are not inflated during an IPO year. They conclude that the change in working capital that occurs during the IPO stage leads researchers to conclude that IPOs engage in earnings manipulation.

Ball and Shivakumar (2008) investigate earnings management engagement in UK IPO firms for the years from 1995 to 1999. They limit their sample to firms that are alike in the features of their prospectuses and financial reports. After examining 171 firms, they
conclude that IPO firms in the UK are more conservative and show no evidence of engagement in earnings management. Ball and Shivakumar (2008, p. 346) believe that IPOs in the UK have less engagement in earnings manipulation pre-IPO due to the need “to meet the market demand for higher quality financials from public firms, and in response to public-firm regulation”. However, their paper is discussed by Lo (2008), who rolls out possibilities for their results contrasting with those of most IPO studies. The first possibility is that Ball and Shivakumar (2008) limited their sample to firms that are alike in certain features of their prospectuses and financial reports, which may have led to the exclusion of IPO firms that engaged in earnings management. In other words, firms that manage earnings might have been excluded. The second possibility argued by Lo (2008) is that, as UK IPOs are allowed to restate pre-IPO financial statements (by mentioning the restatement in their prospectuses), firms are most probably providing financial information in restated statements that is different from the data in the prospectuses, to render the readers of financial reports less able to detect any engagement in earnings manipulation.

Cecchini et al. (2012) argue that managers may engage in earnings manipulation of a single accrual account instead of aggregate accruals. They examine two accounts: the allowance for uncollectible accounts and bad debt expense. Based on a sample of 2,524 IPO firms for the period from 1997 to 2004, they find that IPO firms are more conservative regarding their allowance for uncollectible accounts; namely, when they get closer to the IPO event. They also find that IPO firms engage in income-decreasing decreeing, as they report a higher amount of bad debt expense compared with non-IPOs.

After examination of 691 Chinese IPO firms, Kimbro (2005) contends that IPO firms may use conservative accounting methods in periods subsequent to IPO years that permit them to decrease accrual income as a reserve income for future periods. Consistent with this view, Venkataraman, Weber, and Willenborg (2008) find that the accruals amount before
an IPO is lower than in subsequent periods. They also find that auditing fees are higher when auditors audit the financial statements of IPOs, as auditors are more cautious when auditing prospectuses.

Based on an examination of 512 IPO firms in 24 countries, Seger (2009) provides evidence that a small percentage of the sample had been involved in opportunistic behaviour. After investigating 64 Dutch IPOs, Roosenboom et al. (2003) provide evidence that no earnings management exists in the pre-IPO period.

3.7.1 Critical evaluation of the literature on earnings management and IPOs

In light of the studies discussed above, whether managers engage in earnings management before listing is still a controversial issue. The results vary between developed countries. For example, Ball and Shivakumar (2008) find no engagement in earnings amendment before an IPO in the UK, whereas Teoh et al. (1998b) find a contradictory result in the US. Moreover, the results differ within developing countries. For example, Rakhman (2013) finds that Indonesian IPOs engaged in earnings amendment before an IPO, whereas Roosenboom et al. (2003) find a contradictory result in relation to Dutch IPOs. It is clear from the mixed results mentioned above that the findings also differ between legal and institutional environments. Therefore, the present study empirically examines the possibility of earnings management in Saudi IPOs to determine whether it is evident in these firms. This study adopts the argument of Armstrong et al. (2015) regarding the control of cash proceeds during an IPO to re-examine this argument in relation to a sample in a developing country, which has not been studied in any developing countries. This research also examines the ban of Deloitte within the context of Saudi IPOs as the ban occurred because of an IPO firm13 (Al-Mojil Group).

13 See section 1.2 for more details
3.8 Summary

This chapter provides definitions for earnings management and audit quality. It also provides an in-depth description of the methods that are accessible to managers to conduct earnings management, namely, accrual-based, real activities-based and classification-shifting-based earnings management. Whatever methods are used, they are not cost-free.

This chapter presents a detailed explanation of why managers might be motivated to conduct opportunistic earnings management, especially around the issuing of shares. It also presents the distinction between discretionary accruals and non-discretionary accruals. This chapter provides an overview of proxies that are used to examine the association between earnings management and audit quality; namely, auditor tenure or rotation, auditors’ industry expertise and auditor fees. It also provides in-depth discussion of the use of audit size as a proxy for audit quality, as it is the most appropriate proxy for answering the research questions. It also provides a review of the literature on earnings management studies related to audit quality and IPOs.

The following chapter presents theories that relate to the area of interest of the research; namely, IPOs, audit quality and earnings management. It also develops the hypotheses tested in this research.
Chapter 4: Theoretical Framework and Hypotheses Development

4.1 Introduction

The previous chapter presented a definition of earnings management, an overview of earnings management methods and in-depth discussion related to the motivations for earnings management. It also provided a definition of audit quality and a description of the association between earnings management and audit quality. Moreover, the preceding chapter offered a description of earnings management literature around IPO events.

This chapter aims to provide an explanation of the theories used to develop the hypotheses in this research. Section 4.2 discusses theories of earnings management. Sections 4.3 and 4.3 provide the hypotheses development for the contexts of audit quality and IPOs, respectively. Section 4.5 offers a summary of the chapter.

4.2 Theories of Earnings Management

In the following subsections, theories of earnings management that relate to the research problem are discussed, as these were used as the basis for developing the hypotheses in this research. The theories reviewed are agency theory, stakeholder theory, legitimacy theory and signalling theory.

4.2.1 Agency theory

Agency theory was introduced by Jensen and Meckling (1976). It is one of the most important theories in the context of earnings management and a growing body of literature applies agency theory to earnings management studies, such as Alhadab et al. (2015), Bédard, Coulombe, and Courteau (2008), Sun, Salama, Hussainey, and Habbash (2010) and Prior, Surroca, and Tribó (2008).

When a contractual agreement is signed between two parties, the principal (shareholders) and the agent (managers), an agency relationship occurs. As per the agreement, one party
provides capital (the principal) and the other (the agent) acts on behalf of the principal. This kind of agreement is obvious in public firms where the ownership is widely spread among the shareholders, who do not engage in the daily operation decisions of their firm. Thus, the principal directs risk and delegates decision-making to the agent. Decision-making delegation may lead to disputes between the agent and the principal, as managers may abuse the situation by obtaining private gains, which may have an impact on shareholders’ wealth. This conflict exists because of the information asymmetry between the agent and the principal, which raises agency costs (Beatty & Harris, 1999). Morris (1987) argues that there are two types of agency cost: the agency costs of equity and the costs of bonding and monitoring managers. The agency costs of equity exist when managers act against the interests of shareholders. For example, managers may accept a project that produces less profit compared with another project to achieve some personal interests. The costs of bonding and monitoring managers exist to ensure that managers act in the interests of shareholders. For instance, “the principal and the agent may prefer different actions because of the different risk preference” (Eisenhardt, 1989, p. 58). DeAngelo (1981) argues that agency costs vary from firm to firm and that they vary within a firm over time. Firm characteristics, such as the complexity of the firm and its size, may cause agency costs to increase (Jensen, 1993).

Piot and Janin (2007) state that agency conflict may create motivations and chances for managers to engage in earnings management. This may lead to the existence of information asymmetry between the two parties, as the agents (managers) can manipulate accruals in favour of their own interests, which minimises earnings quality and the relevance and reliability of financial statements. Xie, Davidson III, and DaDalt (2003) view the engagement of managers in earnings management as an agency cost. They argue that engagement in such behaviour harms the users of financial information, such as investors and capital markets (by impacting on the efficiency of the market, which relies
on the information flow to that market). Xie et al. (2003, p. 297) argue that “earnings management obscures real performance and lessens the ability of shareholders to make informed decisions” and, therefore, view the cost of such behaviour as an agency cost. This cost can be classified under the agency costs of equity, following the classification offered by Morris (1987). Jiraporn, Miller, Yoon, and Kim (2008) find that a strong negative relationship exists between agency costs\textsuperscript{14} and earnings management.

Beatty and Harris (1999, p. 300) claim that periodic financial statements do not completely reduce information asymmetry and agency problems and, therefore, “shareholders and managers design contracts in an attempt to further mitigate them”. It is believed that executive compensation may reduce the conflict between managers and shareholders and align their interests (Watts & Zimmerman, 1990). Conversely, Jensen and Meckling (1976) state that this kind of compensation might induce those managing a firm to maximise their wealth rather than that of the shareholders by engaging in particular transactions with the aim of maximising their compensation. Consistent with the view of Jensen and Meckling (1976), Xie et al. (2003, p. 297) argue that when managers are rewarded on the basis of the firm’s financial performance, it may motivate them “to give the appearance of better performance through earnings management”, which may cause an agency problem. Previous empirical studies confirm that managers engage in earnings management to maximise their own benefit and to meet performance-based compensation targets. For example, Healy (1985) argues that increasing a compensation plan might be a strong motivation for manipulating earnings, as he finds a statistically significant association between discretionary accruals and compensation plans.

\textsuperscript{14} Agency costs are measured using the Governance Index developed by Gompers, Ishii, and Metrick (2003).
Baker et al. (2003) believe that managers manipulate the release time of good and bad news to the market to minimise their exercise price. Previous literature also shows that earnings manipulation reduces shareholders' wealth and subsequent reported earnings and stock performance are negatively associated with earnings manipulation (Chang, Chung, & Lin, 2010; Cohen & Zarowin, 2010; DuCharme et al., 2001; Qintao, 2007).

4.2.1.1 Agency theory and audit quality

Principals bear costs to minimise the risk of delegating decision-making to agents (Eisenhardt, 1989). Thus, the principal incurs some costs in monitoring and minimising irregular behaviours by the agent, such as by hiring an external auditor. Agency costs exist due to information asymmetry and conflicts of interest, which raise the demand for monitoring activities. As a result of the segregation between ownership and management in public firms, agency problems are strong in comparison with private firms, which leads to the demand for the monitoring of financial statements through high audit quality (Fama & Jensen, 1983). The level of agency problem has an impact on the demand for monitoring through higher audit quality, and Francis and Wilson (1988) argue that the choice of Big 8 firms is due to the high level of agency costs. Likewise, the demand for higher audit quality is increased when the agency costs are changed (DeFond, 1992). The conflict of interest between the agent and the principal varies between firms; the demand for audit quality also varies.

Piot (2001) states that an external auditor is one of the monitoring devices recognised by agency theory as mitigating conflicts between managers and shareholders and reducing the agency problem. After examining more than 1,500 audit-related adjustments for 15 years, Kinney and Martin (1994) come to the conclusion that external auditors minimise the positive inflation in pre-audit net earnings and net assets. Under the agreement between the principal and the external auditor, the latter acts as an agent who should be
independent of the other agent (the manager). Culpan and Trussel (2005) argue that when hiring a monitor as one of the devices recognised by agency theory, the monitor should be free from any interest in the firm and its administration. Blouin, Grein, and Rountree (2007) find that firms that have high agency problems changed their external auditor after the Arthur Andersen scandal. The researchers argue that the costs that the firms bear by changing the external auditor are far lower than the agency costs that may have been borne by retaining Arthur Andersen. Blouin et al. (2007, p. 647) claim that “companies for whom agency concerns are the most acute consider the independence of their auditor”.

The principal appoints an external auditor as an independent party to minimise agency problem by reducing the information asymmetry in the firm’s financial reports (Piot, 2001). Likewise, Hussainey (2009) believes that the existence of information asymmetry and an agency problem between managers and shareholders leads to a demand for auditing. Becker et al. (1998) contend that auditing minimises information asymmetries by allowing the users of financial statement to substantiate their validity. Dang (2004) points out that the external auditor makes an assertion to the users of the financial statements that these documents are free of inaccuracies. Gul, Lynn, and Tsui (2002) contend that agency costs are lower when high quality auditing exists (the Big 6). Furthermore, they claim that accounting earnings are more informative and discretionary accruals are lower when firms are audited by one of the Big 6, as they find that “Big 6 auditors reduce the negative association between low director ownership and discretionary accruals” (p. 48). Moreover, as the external auditor is recognised by agency theory as an external device to monitor managers, Watts and Zimmerman (1983) claim that high-quality external auditing curbs opportunistic behaviours by management and reduces agency costs.

Becker et al. (1998) argue that even though audit services are useful in minimising managerial discretion, the quality of audit services relies on the quality of the audit firm.
Therefore, appointing a high-quality external auditor reduces managers’ engagement in earnings management and Becker et al. (1998) provide evidence that big accounting firms constrain earnings management.

DeAngelo (1981) argues that opportunistic behaviour is less and perceived audit quality is high with a large auditor size. Francis et al. (1999, p. 19) explain why Big N auditors act as a deterrent to earnings management by stating that Big N auditors “are more likely to constrain aggressive or questionable accounting accruals”. Big N accounting firms have a better understanding and interpretation of accounting standards due to their greater experience, which reduces engagement in accruals earnings management (Francis et al., 1999). Moreover, Palmrose (1988) finds that litigation risk against Big 6 firms is low compared with non-Big 6, which is interpreted by DeAngelo (1988) as conservatism attributable to the former. Furthermore, Francis et al. (1999, p. 19) argue that Big N auditors have “better technologies for detecting problem areas”, which can be explained by the finding of Craswell et al. (1995) that an audit fee premium is earned by Big 6 accounting firms. Higher audit fees allow accounting firms to adopt more advanced and efficient technology.

Big N firms have characteristics that distinguish them from non-Big firms. Big N firms are economically independent as they have a larger number of clients and, therefore, do not rely financially on any one client (Reynolds & Francis, 2000). Reynolds and Frances (2000) also argue that when external auditors have only a few clients, they “compromise their independence and report favourably in order to retain clients” (p. 376). Big N auditors have more resources that they use to train their staff and utilise more advanced technology for auditing (Rusmin, 2010). Rusmin (2010) also argues that Big N auditors

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15 Craswell et al. (1995) use an OLS regression model to measure audit fee premiums.
are concerned about their reputation and, therefore, it is in their own best interests to report breaches in financial reports.

4.2.1.2 Agency theory and IPOs

Teoh et al. (1998b), DuCharme et al. (2001), Brau and Fawcett (2006) and (Gounopoulos & Pham, 2017) point out that high information asymmetry exists in the IPO setting between potential investors and issuers due to the lack of public information about IPO firms. The existence of information asymmetry leads potential investors to rely on prospectuses when making decisions about investing in IPO firms (Teoh et al. (1998b), which may encourage issuers to engage in earnings manipulation activities (Alhadab, Clacher, & Keasey, 2016).

Francis, LaFond, Olsson, and Schipper (2005) argue that, when information asymmetries exist, managers may use accounting choices as a channel to communicate with outsiders about “the timing, magnitude, and risk of future cash flows” (p. 262). They also argue that information disparity between managers and outsiders may motivate managers to engage in earnings management to satisfy their self-interest, believing that “higher earnings will result in higher stock prices, contributing to their compensation or reputation” (p. 262). Thus, an agency problem exists, as Beatty and Harris (1999) contend that information asymmetry leads to agency costs. Agency costs of equity are expected to exist, as IPO managers act against the interests of potential shareholders by engaging in earnings management, whose interests to be able to assess the really performance of IPO firms. In other words, when IPO managers (as agents) engage in earnings management, potential investors (as principals) are not able “to evaluate the appropriateness of reported accounting figures in reflecting the firm’s future performance” (Gounopoulos & Pham, 2017, p. 157).
Earnings management literature around IPOs has shown that managers engage in opportunistic behaviour to maximise the proceeds from an initial offering (Loughran & Ritter, 1995; Neill et al., 1995; Qintao, 2007). Acting on managerial opportunism, IPO managers may promote the future earnings of their firm using earnings management to mislead investors (Qintao, 2007) and (DuCharme et al., 2001). Loughran and Ritter (1995) claim that there is then subsequent underperformance of IPO firms because of earnings management activities.

Teoh et al. (1998a, 1998b) examine the existence of earnings management in the US market around issuing periods (IPOs and SEOs). They find a strong negative association between earnings manipulated upwards by accruals and the subsequent stock return. They believe that earnings manipulation before equity offerings deceives investors in the US market. Thus, if managerial opportunism exists in a strongly regulated market, it is highly probable that it occurs in less-regulated environments, such as Saudi Arabia.

4.2.2 Stakeholder theory

Stakeholders are “Persons or groups that have, or claim, ownership, rights, or interests in a corporation and its activities, past, present, or future. Such claimed rights or interests are the result of transactions with, or actions taken by, the corporation, and may be legal or moral, individual or collective” (Clarkson, 1995, p. 106).

The concept behind stakeholder theory is further explained by Solomon and Solomon (2004), who argue that firms have influence on society and, therefore, should consider the needs of all groups who are affected by their actions; these groups also have influence on firms in some way. Kiel and Nicholson (2003) consider the association between firms and society to be interdependent. Moreover, Deegan, Rankin, and Tobin (2002) consider firms to be part of the social system, whereby firms impact and are impacted. Thus, Culpan and Trussel (2005) argue that firms have a duty to all stakeholders, not only their
shareholders. Solomon and Solomon (2004, p. 23) argue that shareholders “hold a ‘stake’ rather than simply a ‘share’ in companies”.

As stakeholders incorporate “shareholders, employees, suppliers, customers, creditors, communities in the vicinity of the company’s operations and the general public, the extreme proponents of stakeholder theory suggest that the environment, animal species and future generations should be included as stakeholders” (Solomon & Solomon, 2004, p. 24). However, Albassam (2014) claims that each group of stakeholders has a different expectation of the firm concerned; for example, shareholders desire a high return, whereas employees desire a high salary. He also argues that creditors want the firm to have a good financial position to be able to pay back its debts, whereas regulators want the firm to comply with regulations. Thus, firms have a moral duty to balance the different interests among stakeholders, although these duties are to a vague standard, according to Culpan and Trussel (2005).

Sternberg (1997) argues that stakeholder theory is incompatible with the main aim of a firm, which to maximise long-term shareholder value. She also claims that shareholders do not allow others to gain from their investment. Moreover, she questions the ability of firms to balance the competing interests of stakeholders, as she states that “Since all organisations with substantive ends aim at something other than ‘balanced stakeholder benefits’, they are all ruled out by stakeholder theory” (Sternberg, 1997, p. 4). In contrast, Collier (2008) claims that one the roles of governance is to balance the different interests among the stakeholders and firms need, therefore, to consider each group of stakeholders. Furthermore, satisfying only the wishes of shareholders is a short-term strategy, as long-term “survival and success” require the needs of all stakeholders to be satisfied (Collier, 2008, p. 935).

Healy and Wahlen (1999) state that some stakeholders might be misled about underlying economic performance by a firm’s engagement in earnings management. Therefore,
managers may advance their private interests over the interests of stakeholders, whereby stakeholder theory sees the firm’s management as an agent of all stakeholders in the firm. However, Ming Chia et al. (2007) believe that stakeholders in listed firms who have the ability to monitor earnings management activities impose a need for high audit quality. Moreover, Baker and Owsen (2002) argue that all stakeholders, such as investors and creditors, will benefit from enhanced audit quality. Likewise, Culpan and Trussel (2005) argue that employees have a financial stake in their firm, as they may be rewarded with compensation plans, and, therefore, employees will also gain from high audit quality. Ashbaugh and Warfield (2003) state that audit studies tend to adopt agency theory to explain the demand for high audit quality. However, they argue that stakeholder theory might be applied where shareholders are less dispersed and “debt is a more important source of capital” (p. 6). Furthermore, Eilifsen (1998) contends that tax authorities are considered an important stakeholder that may demand high audit quality.

4.2.3 Legitimacy theory

In the last decade, legitimacy theory has gradually come to be used in accounting research (Hoque, 2006). Legitimacy is defined as “a generalised perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions” (Suchman, 1995, p. 574). Legitimacy theory takes into consideration the expectations that society has of firms; therefore, it can be argued that organisational legitimacy is a resource to be used in order for many firms to survive (Hoque, 2006). In addition, Ashforth and Gibbs (1990, p. 177) state that legitimacy “attracts resources and the continued support of its constituents”. Guthrie and Parker (1989) argue that there is a social contract between firms and society, in which firms must comply with the expectations of society. This social contract may be revoked when society is not convinced that a firm is operating in a legitimate manner (Deegan, 2002). For example, 30 years ago, many Australian stores that sold animal fur had to
close, owing to the way in which “changing community attitudes were driven by various media campaigns run by animal welfare organisations” (Hoque, 2006, p. 163). However, Suchman (1995) contends that organisational legitimacy varies from one time to another and from society to society.

In terms of audit quality, Holm and Zaman (2012, p. 53) state that “accounting firms are image-sensitive organizations that rely on creating and maintaining an impression of their activities to correspond with public expectations”. Rusmin (2010) argues that Big N auditors are concerned with their reputation. Moreover, it is argued that the users of financial statements believe that auditors with a higher reputation have more strength in monitoring (Watkins, Hillison, & Morecroft, 2004). Therefore, it is in their own best interests to report breaches of financial reports to legitimise their work by convincing the users of financial statements that the documents are free from misreporting. The legitimacy of Big N auditors “relies not only upon following accepted social norms of conduct but also higher ideals and values such as independence, truth, fairness, and public service” (Whittle, Mueller, & Carter, 2016, p. 120). Thus, firms appoint Big N auditors to legitimise their financial statements by persuading their stakeholders that the financial reports can be trusted. Moreover, it is contended that firms use auditing as a legitimisation tool in order “to manage perceptions of their constituencies and to legitimise their behaviour” (Chiang, 2009, p. 8). Davidson, Jiraporn, and DaDalt (2006) claim that firms change their external auditors from Big N to non-Big N auditors due to legitimate disagreement between the firm and the external auditor, as Big N auditors are more conservative in choosing accounting methods whereas non-Big N auditors are less so and are less restricted by engagement in earnings management.

### 4.2.4 Signalling theory

Signalling theory was introduced by Akerlof (1970) and developed by Spence (1973), mainly to explain labour market behaviour. According to signalling theory, education
level is a credible signal relating to job applicants. The theory argues that managers may not detect the level of employees’ productivity and that those with greater abilities would signal their abilities through reliable characteristics, such as education level. Morris (1987) claims that even though signalling theory was developed in the labour market, it can be applied in any market in which information asymmetry exists. In other words, as information asymmetry exists in the market, signalling is used as a device to convey inside information. Nam et al. (2014) argue that a signal has two characteristics in order to be effective. They argue that the signal has to be visible and expensive to the sender because, if it were not costly, others of lesser quality would imitate the signal. They also believe that a signal is an important factor in influencing the price that buyers are willing to pay.

Brau and Fawcett (2006) believe that signalling theory is significant for IPO studies because of the existence of information asymmetry between two parties: IPO management and potential buyers. DuCharme et al. (2001) also contend that high information asymmetry exists in IPO firms, which leads to buyers and investors being unable to estimate the real value of IPOs. Consequently, IPO firms that have positive information are motivated to moderate the existence of information asymmetry by signalling that information to potential investors (Chang et al., 2008). In addition, Arthurs et al. (2009) argue that, as IPO firms are motivated to overstate prospects, signalling the quality of the firm may reduce ambiguity regarding the true value of the firm.

A considerable amount of IPO literature uses signalling theory and offers several signals held to be used by IPO management, such as appointing a reputable auditor to audit IPO financial statements to signal the quality of the documentation (e.g. Chang et al., 2008; Titman & Trueman, 1986). The smaller the proportion offered for sale to outsiders is also observed as a positive signal (Leland & Pyle, 1977). When firms hire a reputable underwriter during an IPO, it is observed as a positive signal. Yung and Zender (2010)
find that information asymmetry is less during the IPO stage when an underwriter exists. Moreover, the length of the lock-up period can be used as a signal to convey the long-term economic viability of a firm (Arthurs et al., 2009).

Brau and Fawcett (2006) conducted a survey with CFOs in three types of firm: (1) firms that have accomplished an IPO, (2) firms that started the IPO process but withdrew their application, and (3) firms that qualified to apply for an IPO but did not have any intention of pursuing it. The researchers provide evidence that the frequent signals used by CFOs to signify positive aspects of an IPO firm emphasise historical earnings, because potential buyers rely on prospectuses as they have no other public sources of information.

Previous research shows that multiple signals might be used during the IPO stage. Datar, Feltham, and Hughes (1991) provide evidence that IPO firms employ both auditor reputation and retained ownership as signals of IPO quality and value. Copley and Douthett (2002) argue that IPO firms that offer a significant proportion for sale to outsiders will hire a high-quality auditor as a substitute for the negative signal of selling a sizeable portion of ownership. Another study also supports the notion of multiple signals. Yue and McConomy (2004) provide evidence that IPO firms use earnings forecasts as a signal regarding the economic value of the firm. However, they find that earnings forecasts are negatively associated with the proportion of ownership retained and conclude that two signals are employed to substitute each other. Grinblatt and Hwang (1989) support the notion of multiple signals as they present evidence that newly issuing firms send a signal of true firm value by holding a large percentage of the shares and selling shares at a discount.

4.3 Hypotheses Development for Audit Quality

Francis et al. (1999) argue that the separation of ownership and management in public firms increases the likelihood of engagement in earnings management. The opportunistic
behaviour of management leads to a need for external monitoring to control these activities and reduce agency costs (Jensen & Meckling, 1976). External auditors reduce information asymmetries between principals and agents, as they provide validation for financial statements (Becker et al., 1998). The rise in agency costs induces the need for Big accounting firms because their assertions carry greater weight (Becker et al., 1998; Francis et al., 1999).

Most prior studies provide evidence that large accounting firms deliver a higher audit quality and constrain earnings management. The lowering of discretionary accruals is associated with a higher quality of auditing, as auditors who provide a high-quality service are expected to identify aggressive engagement in discretionary accruals manipulation. Agency theory suggests that to minimise agency conflict between manager and shareholders, an effective monitoring scheme should exist to ensure that managers act in the interests of shareholders. One monitoring devices recognised by agency theory is the external auditor, who should be highly independent in order to achieve effective monitoring. Kanagaretnam, Lim, and Lobo (2010) believe that a high level of independence can be assumed in Big N firms as they are deeply concerned about their reputation. The researchers also argue that, as it is found that Big N firms withdrew from providing auditing services for 1,200 clients after the Enron–Andersen scandal, litigation risk may encourage a high level of independence. Furthermore, DeAngelo (1981) positively associates independence with audit quality. Albassam (2014) argues that firms on the SSM are largely owned by government and family shareholdings, which leads firms to preference the interests of shareholders over those of other stakeholders. Hope, Thomas, and Vyas (2017) claim that other stakeholders (e.g., creditors and other shareholders) may be misled about a firm’s performance by engaging in earnings manipulation, which may lead them to demand higher audit quality. It is argued by (Chiang, 2009) that the perceptions of firms’ stakeholders are managed by using auditing
as a legitimation tool for firms’ behaviour. However, it is also stated that Big N auditors are concerned about their reputation Rusmin (2010). Therefore, Big N auditors are more likely to report any breaches in financial reports in order to legitimise their own work by assuring the users of financial statements that the documents are free of misstatement.

Becker et al. (1998) use discretionary accruals as a proxy for audit quality. They find that firms audited by the Big 6 produce fewer discretionary accruals and conclude that the Big 6 deliver high audit quality. Another key article in the area of audit quality and earnings management is by Francis et al. (1999), who find that a constraining of the aggressive reporting of discretionary accruals is associated with the Big 6 auditors. Big 4 auditors that acquired clients from Arthur Andersen in 2002 after the Andersen crisis in 2001 mitigated the discretionary accruals in Andersen’s former clients (Cahan & Zhang, 2006).

Van Tendeloo and Vanstraelen (2008) provide evidence that the engagement of earnings management is less when firms are audited by the Big 4 auditors in European countries. A very recent study by Houqe et al. (2017) finds that the Big 4 firms curb positive earnings management (income-increasing) in India.

This study chooses the Big 4 accounting firms as a proxy for audit quality. Becker et al. (1998) believe that the Big 6 are the most-used proxy in the literature for audit quality. They also claim that Big accounting firms are concerned about their reputation, which encourages them to be independent. DeFond and Zhang (2014) state that the strength of using the Big N as a proxy for audit quality is “its relatively high construct validity” (P.289). They also believe this type of measurement is the most valuable for studies examining “the client's demand for audit quality” (p. 289).

This study investigates the ban on Deloitte from carrying out any audit work for listed firms for two years in Saudi Arabia, as this ban was the first by the Capital Market Authority (CMA) since it was established, which implies that Deloitte’s audit quality was lower than that of other audit firms. Furthermore, this research investigates the role of the
Big 4 auditors in constraining discretionary accruals in Saudi Arabia. As this ban was the first by the CMA, it indicates that litigation risk is low in Saudi Arabia. Consequently, the Big 4 are driven by reputation loss to provide high audit quality rather than face litigation. Although agency theory and most prior studies suggest that the Big N curb earnings management activities, banning one of the Big 4 raises a question about the role of these auditors in providing high audit quality in Saudi Arabia. Accordingly, the hypotheses are developed as follows:

H1: There are no differences in the level of discretionary accruals in firms audited by the Big 4 compared with firms audited by non-Big 4 accounting firms.

H2: Firms audited by Deloitte are more likely to provide a higher level of discretionary accruals compared with firms audited by the other Big 4 accounting firms.

4.4 Hypotheses Development for IPOs

The CMA banned Deloitte from auditing any listed companies in Saudi Arabia following the collapse in 2012 of the Al-Mojil Group, which went public in 2008. Deloitte audited the pre-IPO-year financial statements of Al-Mojil, as well as for the four years after the company went public from 2008 to 2011. From 2010, the Al-Mojil Group had been announcing losses. This dilemma raises doubt about the engagement in earnings management before going public and the audit quality in IPO firms in the wider Saudi context. Therefore, this study examines earnings management engagement before going public and audit quality in the pre-IPO years. The following sections develop hypotheses for earnings management and audit quality in the years before a firm goes public.

4.4.1 Earnings management before going public

This research adopts agency theory as a theoretical framework. There is a relationship between current shareholders (the agent) and future investors (the principal) and agency theory explains the motivation for insiders to engage in income-increasing earnings
management. As an IPO is the first chance for the current shareholders of a private firm to sell a significant portion of their shares to the public, insiders are motivated to do so to inflate the offer price to increase offering proceeds (Aharony et al., 1993). Ball and Shivakumar (2005) argue that UK private firms have less restrictive regulation regarding financial reporting. If this is the case in a developed country, the regulation of financial reporting is likely to be less restrictive in a developing country such as Saudi Arabia. Al-Barrak (2005) considers Saudi Arabia to be an emerging market. It is found that the level of engagement in earnings management is high in countries that have “less developed capital markets and weak investor protection” (Leuz et al., 2003, p. 525). Saudi Arabia suffers from weaknesses in investor protection (Habbash & Alghamdi, 2015). They also argue that legal enforcement is weak in Saudi Arabia. Less restrictive regulation is another motivation for manipulating earnings before listing.

This research also adopts signalling theory to explain the motivation to engage in earnings management around an IPO. Managers of IPOs use historical earnings as a positive signal that they send to future investors (Brau & Fawcett, 2006). They came to this conclusion after surveying over 300 IPO managers. Future investors consider the quality of IPOs by the signal that insiders send due to the existence of information asymmetry between the two parties. The interpretation of signals will have an impact on the price of the IPOs that future investors are prepared to pay (Nam et al., 2014).

Prior et al. (2008) argue that future investors are misinformed by inflated earnings that impede future investors from making the right economic decisions. Hence, Saudi IPO insiders have an incentive to engage in earnings increasing in order to convey the impression to future investors that the firm has a promising economic future. Accordingly, buyers of IPO shares will positively overvalue the real value of an IPO.

As stated previously, prior studies offer examples of several signals that can be used by IPOs to convey the information that insiders have. The signals most nominated by the
literature are historical earnings or earnings reported in prospectuses, the lock-up period and auditor reputation. Brau and Fawcett (2006) provide evidence that a signal frequently used by CFOs to signal positively about an IPO firm is an emphasis on historical earnings. Two signals are examined in this current research: reported earnings and auditor reputation.

Teoh et al. (1998b) provide evidence that IPOs engage in income-increasing activities in an IPO year to inflate the share price to the highest possible value. They argue that the lock-up period is a motivation for IPO firms to keep the performance of the firm as high as possible to influence the share price, which maximises the wealth of pre-IPO ownership. Therefore, as the lock-up period in Saudi Arabia is six months, Saudi IPOs are more likely to engage in greater earnings management in the year of an IPO, as well as in the pre-IPO year.

Another reason that IPO firms manage earnings in an IPO year instead of the pre-IPO year is that when IPO firms report a decline in earnings in the IPO year compared with earnings in the years before the IPO, they may face a risk of litigation. Gramlich and Sorensen (2004) provide evidence that IPO firms that engage in earnings manipulation before an IPO event are more likely to manipulate earnings in the IPO year, which probably indicates these kinds of firms engage in these activities to avoid litigation risk. An additional reason for IPO firms managing earnings in an IPO year instead of in the pre-IPO year is that prospectuses provide earnings predictions, which puts pressure on IPO firms to achieve their predictions to avoid litigation risk and reputation damage. It is argued by Gramlich and Sorensen (2004) that IPO firms manage earnings in the first reported year after an IPO to meet the forecast they made in their prospectus. Teoh et al. (1998b) strongly believe that compensation plans are a strong motivation for IPO managers to engage in income-increasing earnings management, as the vesting date is usually after the date of the IPO.
Numerous studies find that IPO firms engage in earnings management. Friedlan (1994) indicates that IPO firms engage in income-increasing discretionary accruals in the pre-IPO year. They also report an extreme case of turning losses into profits by using discretionary accruals. Jain and Kini (1994) provide evidence that firms take part in window dressing in pre-IPO years to make them appear promising by improving operating performance prior to offerings. DuCharme et al. (2001) show a negative association between discretionary accruals (in the year before an IPO and the year of the IPO) and subsequent stock returns. They also reach the conclusion that the aggressive use of discretionary accruals leads to a sharp drop in investors’ future returns. Alhadab et al. (2015) report that IPO firms engage in upwards earnings management in both real and accruals during the IPO year. A recent finding by Gao et al. (2017), who examine the impact of institutional investors on the offer price of Chinese IPOs, provides evidence that there is a negative correlation between discretionary accruals in the year before an IPO and the offering price for institutional investors. They argue that investors are aware of such earnings manipulation as they offer a lower price. Rakhman (2013) contends that IPO firms engage in income-increasing activities in the two years before the year of an IPO. He also provides evidence that IPOs inflate discretionary accruals in the year of becoming public. This leads to the following hypotheses:

H3: Saudi IPO firms engage in income-increasing activities in the pre-IPO year.

H4: Discretionary accruals in the IPO year are higher compared with the pre-IPO year.

4.4.2 Earnings management before listing and auditor size

Past research shows that multiple signals might be used during an IPO (Copley & Douthett 2002; Datar et al., 1991; Grinblatt & Hwang, 1989; Yue & McConomy, 2004). Another signal that Saudi IPO firms may use during the IPO stage, in addition to historical earnings before listing, is appointing one of the Big 4 auditing firms to audit pre-listing financial statements. Chang et al. (2008) argue that IPO firms signal the quality of their
firm by hiring one of the Big 4 and the researchers provide evidence that audit quality minimises the doubt around IPO firms. As potential buyers have no access to the information that managers have to evaluate the real quality of an IPO easily, they may consider financial statements audited by one of the Big 4 as a signal that differentiates the quality of the firm (i.e., high vs low quality).

A considerable volume of literature provides evidence that Big accounting firms mitigate accruals earnings management. For example, Becker et al. (1998) examine the association between audit quality and earnings management and find that firms audited by non-Big 6 auditors report higher discretionary accruals than firms audited by the Big 6. Vinten et al. (2005) find that Big N auditors constrain accruals earnings management for Taiwan IPO firms. Zhou and Elder (2001) also examine the association between audit quality and earnings management. They provide evidence that there is a negative association between these variables and use two proxies for audit quality: auditor size and industry specialist.

Based on the above discussions, Saudi IPOs audited by the Big 4 auditing firms use auditor reputation as a signal to distinguish their own from low-quality firms. Thus, the following hypothesis is developed:

**H5:** There is a negative relationship between income-increasing in pre-IPO years and Big 4 auditors.

One of the aims of this study is to investigate the ban on Deloitte from carrying out any audit work for listed firms for two years in Saudi Arabia, which implies that Deloitte’s audit quality is lower than that of other audit firms. This research anticipates that IPO firms audited by Deloitte will engage in positive discretionary accruals. Therefore, the following hypothesis is developed:

**H6:** In pre-IPO years, firms audited by Deloitte are more likely to engage in income-increasing activities compared with firms audited by other accounting firms.
4.5 Summary

This chapter provides an in-depth explanation of the theories related to the research topics that were used to develop the research hypotheses. Agency theory explains the need for an external auditor to minimise the risk of giving decision-making to agents and to reduce the information asymmetry in firms’ financial reports. Stakeholder theory clarifies the demand for high audit quality by stakeholders (e.g., creditors) in order to provide more credibility for financial statements. Legitimacy theory explains how firms use Big N auditors as a legitimisation tool and how these auditors legitimise their work by reporting breaches, if there are any, in financial reports.

Agency theory is used in the context of IPOs as it is argued that IPO managers may engage in earnings management to deceive investors about the real earnings of an IPO. Another theory adopted in the IPO context is signalling theory. The adoption of this theory in this study is due to the existence of information asymmetry between IPO management and potential buyers. The literature shows that IPOs use several signals to reveal inside information.

The next chapter provides a discussion of the research philosophy followed in this study and the measurements of earnings management employed to answer the research questions and test the research hypotheses outlined above.
Chapter 5: Research Methodology

5.1 Introduction

After discussing theories relevant to this study and developing the research hypotheses in the preceding chapter, this chapter provides an in-depth discussion related to the research methodology and methods and identifies the most appropriate for fulfilling the aims of this study.

The types of research philosophy available for researchers to use in the social sciences are discussed in section 5.2. Research strategies and approaches are addressed in sections 5.3 and 5.4, respectively. Measurements of discretionary accruals used in this study are demonstrated in section 5.5 with a brief discussion of all the models developed in the literature that are considered to be the basis of the chosen model. Section 5.9 presents the multiple regression model used to test the research hypotheses and the sample selection criteria are presented in section 5.10.

5.2 Research Philosophy

Two main philosophical positions are adopted in the social sciences: phenomenology and positivism. The phenomenological philosophy posits that the researcher is part of reality and is socially constructed; it is, therefore, subjective. Easterby-Smith, Thorpe, and Lowe (1991) indicate that, according to phenomenological philosophy, when research is being conducted, the focus should shift to the constructions and perceptions that individuals hold based on their experiences, instead of focusing on facts and measurements. Similarly, Miller and Brewer (2003) argue that discovering reality and developing an understanding of the world come from individuals’ experiences and their interpretations are thus based on their world understanding.

On the other hand, positivism presumes that reality is isolated from the researcher. Thus, when reality is explored, objective methods should be used to isolate feelings, perception
or intuition. Positivism advocates the belief that as reality is external, knowledge cannot be real unless it is observable (Hjørland, 2005). To put it simply, the philosophical stance of positivism is to presume an absolute separation between the researcher and the subject. Johnson and Duberley (2000, p. 37) state that in “positivism, the truth is found” through the “researcher’s passive registration” of established facts. Similarly, Easterby-Smith et al. (1991) argue that in positivism findings are assumed to be measurable, generalisable and to result from causal effects, which are deduced from hypothesis testing. This research project adopts positivism as its research philosophy and assumes independence between the researcher and the subject because the feeling, perception or intuition of the researcher does not change the reality of what is being explored. Moreover, the hypotheses in this study are developed from existing theories. In this case, Saunders, Saunders, Lewis, and Thornhill (2011) suggest adopting a positivist approach. Furthermore, Johnson and Duberley (2000) believe that most business research studies are considered to be positivist, stating that “a quick scan of the majority of business journals, particularly those from the USA, provides clear examples of positivism assumptions” (p. 83). Therefore, the researcher of this study has adopted a positivist position to answer the research questions and test the research hypotheses.

5.3 Research Strategy

Three research strategies exist: quantitative, qualitative and mixed methods. Smith (1983) believes the difference between these three strategies lies in their epistemological foundations. According to Bryman and Cramer (2001), quantitative research involves a strategy that focuses on “quantification in the collection and analysis of data” and, hence, includes the gathering and examination of numerical data and the conducting of statistical tests. According to Johnson and Duberley (2000, p. 44), a study that applies quantitative techniques “tends to emphasize the importance of large-scale and representative sets of
data and is perceived as gathering observable facts”. It is based on the positivist philosophy and uses a deductive approach to test a theory.

In contrast, Johnson and Duberley (2000, p. 61) define the approach of qualitative research as “mostly exploratory in nature, involving relatively small numbers of respondents who have not been sampled on any scientific basis, although they have been carefully selected, and where no attempt to qualify or draw hard and fast conclusions is made”. Consequently, studies use qualitative methods whenever the need exists to understand how things occur or how they are associated with each other, instead of merely measuring the association between variables.

Guba and Lincoln (1994) characterise qualitative research as answering the questions regarding ‘what’, ‘why’ and ‘how’, but not ‘how many’. Based on the interpretivist philosophy, the emphasis in qualitative research is on words rather than quantification. In qualitative research, an inductive approach is used to generate a theory.

The mixed-methods approach amalgamates the two approaches (Creswell, 2009). This type of research has been welcomed because it integrates the analysis of quantitative and qualitative data (Elnathan, Lin, & Young, 1996). The use of mixed methods is based on the post-positivist paradigm (Howell, 2013). As financial statements are the main source used, this study uses quantitative research to draw meaningful results from a large body of quantified data. In addition, as this research examines the relationships between independent and dependent variables to test research hypotheses that are deduced from theory, a quantitative approach should be used (Saunders et al., 2011). Moreover, Crotty (1998) and Saunders et al. (2011) point out that adopting a positivist position tends to mean using quantitative methods. Therefore, a quantitative approach was adopted in this research to achieve the research objectives and answer the research questions.
5.4 Research Approach

A theory plays an important role in research design because it influences whether the researcher uses a deductive or inductive approach. The deductive approach tests a theory or hypothesis developed by the researcher, who also designs the research strategy (Saunders et al., 2011). When research is conducted to explain or examine the association between variables, the deductive approach is adopted, as this is usually undertaken when following a quantitative method (Soiferman, 2010).

The first source of knowledge in a deductive approach is the theory that leads the researcher to deduce a hypothesis that is then subjected to empirical examination. Knowledge production is considered a linear process that starts from a theory and ends with the confirmation or rejection of the hypothesis (Eriksson & Kovalainen, 2008). The deductive approach tends to be preferred more by positivist researchers than interpretivist ones (Veal, 2005).

In the inductive approach, the researcher deduces a theory or hypothesis from his or her findings. In other words, knowledge production starts with data collection, upon which data are analysed to build a theory or hypothesis. However, Eriksson and Kovalainen (2008) argue that in business research, theory can be established by empirical research but not the other way around. Overall, the inductive approach explores why a certain aspect occurs, whereas the other approach gives an explanation of what is happening (Saunders et al., 2011). In the social sciences, the deductive approach is by far the most common way of developing a theoretical knowledge base (Eriksson & Kovalainen, 2008). The inductive approach tends to be preferred more by interpretivist researchers than positivist ones (Veal, 2005).

In this study, the researcher adopts a deductive approach to examine Deloitte’s audit quality and the presence of earnings management around the time of listing in the context of both theories used in the relevant literature: signalling theory and agency theory.
(presented in detail in chapter 4). The researcher developed the research questions based on these theories and then formulated the hypotheses accordingly (see chapter 3). In the deductive approach, hypotheses must be subjected to empirical scrutiny, so this study uses ordinary least squares (OLS) regression analysis to test them, leading either to acceptance or rejection of the hypotheses in accordance with the chosen theories.

5.5 Earnings Management Measurement

Earnings management literature distinguishes between three methods of accruals earnings manipulation:16 accounting method choice, accounting method application and accounting method timing. The first method is easily scrutinised, as firms are required to disclose any change in accounting method, whereas the others are more difficult. Healy (1985) believes that managers who engage in earnings management prefer to manipulate accruals, as engaging in changing accounting policies is more costly to managers. The literature on earnings management proposes several models to capture earnings manipulation due to the difficulties in detecting accruals earnings management.

A large and growing body of literature uses discretionary accruals to scrutinise the engagement of earnings manipulation (e.g. Boone et al., 2015; Dechow et al., 1995; Francis et al., 1999; He, 2016; Teoh et al., 1998a, 1998b). This research demonstrates the measurements of discretionary accruals used as proxies for earnings management through illustrating prior research that developed and improved these methods.

The first to develop a measurement for discretionary accruals was Healy (1985), who examines whether managers engage in earnings manipulation to maximise their reward from bonus schemes. After examining 94 firms in the US in 1980, Healy (1985) provides evidence that managers engage in income-increasing accruals to meet their targeted performance. Healy (1985, p. 86) calculates total accruals as “the difference between

16 See chapter 3 for more details.
reported earnings and cash flow from operation”. Discretionary accruals are estimated in Healy (1985) model as follows:

\[ DISACC_{j,t} = \frac{TOTACC_{j,t}}{TOTA_{j,t-1}} \]  \hspace{1cm} (1)

*Where:*

\( DISACC_{j,t} \) = Firm’s discretionary accruals for the year.

\( TOTACC_{j,t} \) = Firm’s total accruals for the year.

\( TOTA_{j,t-1} \) = Firm’s total assets for the previous year.

Although Healy points out that total accruals comprise non-discretionary accruals, he ignores non-discretionary accruals when examining earnings management, as he assumes that non-discretionary accruals do not occur during the estimation period. However, Kaplan (1985) argues that the assumption that non-discretionary accruals equal zero is inappropriate, as non-discretionary accruals rely on the economic conditions of the firm and managers have no control over them.

To overcome the fragility in Healy’s model, DeAngelo (1986) argues that the variation in non-discretionary accruals over time is almost zero. Consequently, the variation in total accruals between years is assigned to discretionary accruals. Nevertheless, Friedlan (1994) claims that DeAngelo’s assumption is false, as accruals are the difference between years due to growth. Discretionary accruals are estimated according to this model as follows:

\[ DADISACC_{j,t} = \frac{(TOTACC_{j,t} - TOTACC_{j,t-1})}{TOTA_{j,t-1}} \]  \hspace{1cm} (2)

*Where:*

\( TOTACC_{j,t-1} \) = Firm’s total accruals for the previous year; the other variables are defined in equation (1).

This study applies Kothari et al. (2005) modification of a developed version of Jones (1991) model, which introduced the notion of overcoming the assumption of constant non-discretionary accruals by Healy (1985) and DeAngelo (1986).
Jones (1991) model includes a change in revenues to control for non-discretionary accruals from operating or working capital, and includes the gross for property, plant and equipment to control for non-discretionary accruals from depreciation (Perry & Williams, 1994).

Dechow et al. (1995) point out that this model takes into consideration the influence of the economic conditions of a firm on non-discretionary accruals. Jones model estimates discretionary accruals by generating coefficients that are used to predict non-discretionary accruals, as follows:

\[ \frac{TOTACC_{j,t}}{TOTA_{j,t-1}} = a_0 + \beta_1 \left[ \frac{1}{TOTA_{j,t-1}} \right] + \beta_2 \left[ \frac{\Delta REVE_{j,t}}{TOTA_{j,t-1}} \right] + \beta_3 \left[ \frac{GRPPE_{j,t}}{TOTA_{j,t-1}} \right] + \varepsilon_{j,t} \] (3)

Where:
\( \Delta REVE_{j,t} \) = Change in firm’s revenues for the year.
\( GRPPE_{j,t} \) = Firm’s gross property, plant, and equipment for the year.
\( \varepsilon_{j,t} \) = Error term; the other variables are defined in equation (1).

The coefficients from the previous equation are used to estimate non-discretionary accruals as follows:

\[ NDISA_{j,t} = \hat{\beta}_0 + \hat{\beta}_1 \left[ \frac{1}{TOTA_{j,t-1}} \right] + \hat{\beta}_2 \left[ \frac{\Delta REVE_{j,t}}{TOTA_{j,t-1}} \right] + \hat{\beta}_3 \left[ \frac{GRPPE_{j,t}}{TOTA_{j,t-1}} \right] \] (4)

Where:
\( NDISA_{j,t} \) = Firm’s expected non-discretionary accruals for the year; the other variables are defined in equations (1) and (3).

Discretionary accruals are then calculated as follows:

\[ DISA_{j,t} = \left[ \frac{TOTACC_{j,t}}{TOTA_{j,t-1}} \right] - NDISA_{j,t} \] (5)

Where:
\( DISA_{j,t} \) = Firm’s expected discretionary accruals; the other variables are defined in equations (1) and (4).
Dechow et al. (1995) believe that managers can engage in earnings manipulation over revenues. They presume that managers could manipulate earnings through credit sales as they may inflate credit sales towards the end of the fiscal year before cash is received. Consequently, total accruals will increase because of the discretion from unreceived cash. Based on this argument, they claim that any change in account receivables derives from earnings management. Thus, revenues are not entirely free from managerial discretion, as managers can boost revenues by relaxing the credit policy.

Dechow et al. (1995) modify Jones (1991) model by subtracting the change in account receivables from the change of revenues when computing non-discretionary accruals, as follows:

\[
\begin{align*}
\text{NDISA}_{j,t} &= \hat{\beta}_0 + \hat{\beta}_1 \left( \frac{1}{\text{TOTA}_{j,t-1}} \right) + \hat{\beta}_2 \left( \frac{\Delta \text{REVE}_{j,t} - \Delta \text{RECE}_{j,t}}{\text{TOTA}_{j,t-1}} \right) + \hat{\beta}_3 \left( \frac{\text{GRPPPE}_{j,t}}{\text{TOTA}_{j,t-1}} \right) \tag{6}
\end{align*}
\]

Where:
\[
\Delta \text{RECE}_{j,t} = \text{Change in firm’s receivables for the year; the other variables are defined in equations (1), (3) and (4).}
\]

They believe that this amendment eliminates any earnings management through revenues. To support their arguments, they examine Healy (1985) and Jones (1991) using their modification. They conclude that Jones (1991), with the proposed modification, is the more powerful model among these models.

A further improvement on Jones model is recommended by Kothari et al. (2005). Evidence is provided by Dechow et al. (1995) that a positive relationship exists between discretionary accruals and return on assets (ROA). Therefore, Kothari et al. (2005) believe that Jones model and the modified model by Dechow et al. (1995) suffer from an error in the measurement of discretionary accruals, as they ignore operating performance. They recommend adding ROA as a regressor to control for operating performance, especially with excessive performance, and this will moderate heteroscedasticity and
error in the measurement of discretionary accruals. They estimate discretionary accruals using Jones model, the modified Jones model and an adjusted performance model to compare the three. They find that the adjusted performance model produces more reliable inferences. Kothari et al. (2005) measure discretionary accruals as follows:

\[
\frac{TOTACC_{j,t}}{TOTA_{j,t-1}} = a_0 + \beta_1 \left[ \frac{1}{TOTA_{j,t-1}} \right] + \beta_2 \left[ \frac{\Delta REVE_{j,t}}{TOTA_{j,t-1}} \right] + \beta_3 \left[ \frac{GRPPE_{j,t}}{TOTA_{j,t-1}} \right] + \beta_4 ROASST_{j,t-1} + \varepsilon_{j,t}
\]

(7)

Where:

\(ROASST_{j,t-1} = \) Firm’s return on assets for the preceding year; the other variables are defined in equations (1) and (3).

The coefficients from the previous equation are used to estimate non-discretionary accruals as follows:

\[
NDISA_{j,t} = \hat{\beta}_0 + \hat{\beta}_1 \left[ \frac{1}{TOTA_{j,t-1}} \right] + \hat{\beta}_2 \left[ \frac{\Delta REVE_{j,t} - \Delta RECE_{j,t}}{TOTA_{j,t-1}} \right] + \hat{\beta}_3 \left[ \frac{GRPPE_{j,t}}{TOTA_{j,t-1}} \right] + \hat{\beta}_4 ROASST_{j,t-1}
\]

(8)

All variables are defined in equations (1), (3), (4) and (6).

Discretionary accruals are then calculated as follows:

\[
DISA_{j,t} = \frac{TOTACC_{j,t}}{TOTA_{j,t-1}} - NDISA_{j,t}
\]

(9)

All variables are defined in equations (1), (4) and (5).

5.5.1 Total accruals measurement

The first step in estimating discretionary accruals is to calculate total accruals. The literature offers two alternative methods for calculating total accruals. The first method is the balance sheet approach, which is employed by some previous studies, for instance, Healy (1985), Jones (1991) and Dechow et al. (1995). In this approach, total accruals are calculated indirectly, as follows:

\[
TOTACC_{j,t} = \Delta CURACC_{j,t} + \Delta C_{j,t} + \Delta CURLIB_{j,t} + \Delta LODL_{j,t} - DEPRECI_{j,t}
\]

Where:
\( \Delta \text{CURACC}_{j,t} = \text{Change in firm’s current assets.} \)
\( \Delta \text{C}_{j,t} = \text{Change in firm’s cash.} \)
\( \Delta \text{CURLIB}_{j,t} = \text{Change in firm’s current liabilities.} \)
\( \Delta \text{LOD}_{j,t} = \text{Change in firm’s long-term debt contained in current liabilities.} \)
\( \text{DEPRECI}_{j,t} = \text{Firm’s depreciation and amortisation expenses; the other variables are defined in equation (1).} \)

The second method is the cash flow approach, which is employed by studies such as DeFond and Subramanyam (1998), Yun et al. (2010), Teoh et al. (1998a, 1998b), Boone et al. (2015) and Jaggi, Leung, and Gul (2009). In this approach, total accruals are calculated directly from the cash flow statement, as follows:

\[
\text{TOTACC}_{j,t} = \text{EBEXTI}_{j,t} - \text{CASHFO}_{j,t}
\]

(11)

Where:
\( \text{EBEXTI}_{j,t} = \text{Firm’s earnings before extraordinary items for the year.} \)
\( \text{CASHFO}_{j,t} = \text{Firm’s cash flow from operations for the year; the other variables are defined in equation (1).} \)

Hribar and Collins (2002) examine the difference between two approaches in generating an accurate measurement of total accruals. They find that the cash flow approach generates an accurate measurement when companies experience a merger or acquisition or discontinue operation events. They also find that substantial frequency and magnitude of errors exist when the balance sheet approach is used. In addition, they argue that using the balance sheet approach when firms discontinue some of their operations may lead to bias, as discontinuing operations might be considered discretionary. Furthermore, Kothari et al. (2005, p. 159) recommend that future research uses the cash flow approach, as the use of balance sheets “not only reduces the discretionary accrual models’ power to detect earnings management, but also has the potential to generate incorrect inferences about earnings management”. In this study, therefore, the cash flow approach is used to compute the total accruals.
5.5.2 Current accruals model

Total accruals can be divided into two parts: current and long-term accruals (Teoh et al., 1998a). Teo et al. (1998a) argue that most of the manipulation in earnings management occurs with current accruals, which are driven from daily operations.¹⁷ Beneish (1998) believes that engaging in earnings management over depreciation is explicit. He therefore argues that there is some doubt in using depreciation to manage earnings due to the availability of other means that are less explicit. Following Beneish (1998) call to use current discretionary accruals as a proxy for earnings management, some studies have applied it, for instance, Roosenboom et al. (2003), Chaney, Faccio, and Parsley (2011) and Athanasakou et al. (2009).

Teoh et al. (1998a) and Roosenboom et al. (2003) define accruals as follows:

\[
CURRACC_{j,t} = \Delta CURRACC_{j,t} - \Delta C_{j,t} - \Delta CURLIB_{j,t} + \Delta LODL_{j,t}
\]  
(12)

Where:

\[
CURRACC_{j,t} = \text{Firm’s current accruals for the year; the other variables are defined in equation (10).}
\]

Current discretionary accruals are measured using the Kothari model, as follows:

\[
\frac{CURRACC_{j,t}}{TOTA_{j,t-1}} = a_0 + \beta_1 \left[ \frac{1}{TOTA_{j,t-1}} \right] + \beta_2 \left[ \frac{\Delta REV_{j,t}}{TOTA_{j,t-1}} \right] + \beta_4 ROASST_{j,t-1} + \epsilon_{j,t}
\]  
(13)

All variables are defined in equations (1), (3), (7) and (12).

The coefficients from the previous equation are used to estimate non-discretionary current accruals, as follows:

\[
NDISCA_{j,t} = \beta_0 + \beta_1 \left[ \frac{1}{TOTA_{j,t-1}} \right] + \beta_2 \left[ \frac{\Delta REV_{j,t} - \Delta RECEIV_{j,t}}{TOTA_{j,t-1}} \right] + \beta_4 ROASST_{j,t-1}
\]  
(14)

\[
NDISCA_{j,t} = \text{Firm’s expected non-discretionary current accruals for the year; the other variables are defined in equations (1), (3), (6) and (7).}
\]

¹⁷ Some studies, such as Teoh et al. (1998a), use the term ‘working capital accruals’ instead of current accruals.
Discretionary current accruals are then calculated as follows:

\[ DCURRA_{j,t} = \left[ \frac{CURRACC_{j,t}}{TOTAJ_{j,t-1}} \right] - NDISCA_{j,t} \] (15)

Where:

\[ DCURRA_{j,t} = \text{Firm’s expected discretionary current accruals for the year; the other variables are defined in equations (12) and (14).} \]

5.5.3 Time-series versus cross-sectional methods

Earnings management literature proposes two methods for using Jones’ model and the modified models: time-series and cross-sectional. The time-series method requires several years (up to 10) to predict the coefficient of non-discretionary accruals before the period of interest that is wanted for examining earnings management. The method presumes that no systematic earnings management occurs during the period of interest (Dechow et al., 1995). The cross-sectional method requires yearly estimation for each industry to predict the coefficient of non-discretionary accruals. In other words, the coefficient of non-discretionary accruals is predicted every year for each industry.

This study applies the cross-sectional method to estimate non-discretionary accruals for several reasons. First, given the requirement of a long period of time (up to 10 years) for the time-series method to be applied, the cross-sectional method seems to be more suitable as it produces a larger sample. Second, this study is not an event study to use time-series. Third, prior studies demonstrate that the cross-sectional method produces more accurate estimates (DeFond & Jiambalvo, 1994; Subramanyam, 1996). Moreover, Peasnell et al. (2000) examine both methods and find that the cross-sectional approach is more powerful at identifying accruals earnings manipulation. Bartov, Gul, and Tsui (2001) encourage researchers to use the cross-sectional instead of the time-series method, as the latter minimises the sample size and may cause survival biases. It is also argued that external economic circumstances that impact on industries can be controlled by using the cross-sectional method (Kaplan, 1985).
5.6 Dependent Variable Measurement

This study adopts the latest modification of Jones model by Kothari et al. (2005), as they claim that the Jones and modified Jones models suffer from heteroscedasticity and error in the measurement of discretionary accruals. Dechow et al. (1995) also argue that these models are possibly mis-specified, as there is an association between discretionary accruals and the performance of the firm. The adoption this model follows recent studies in accruals earnings management, such as Filip and Raffournier (2014), Mao and Renneboog (2015), Shust (2015) and He (2016).

5.6.1 Earnings management measurement for audit quality

In this study, the estimation model is run yearly for each industry using the Kothari et al. (2005) model for the period from 2004 to 2014. The sample is restricted to a minimum of eight observations for each industry per year to run the estimation model to be consistent with Cohen and Zarowin (2010) and Yuan et al. (2016). Following Qintao (2007) and Myers et al. (2003), this study excludes the lock-up period of IPO firms from the estimation model. This exclusion is undertaken to eliminate any discretionary accruals activities related to IPO firms (Myers et al., 2003). Nam et al. (2014) find that venture capitalists with a high reputation moderate the strong association between earnings management and abnormal returns before the end of a lock-up period. Teoh, Wong, and Rao (1998c) exclude the IPO year as the lock-up period is six months in the US market. Consequently, lock-up periods are excluded in this study in order to have an accurate estimation model when predicting discretionary accruals.

Following previous studies (e.g. Boone et al., 2015; Carcello, Hollingsworth, & Mastrolia, 2011; Chen, Chen, Lobo, & Wang, 2011; Francis & Michas, 2013; Krishnan, 2003b; Reynolds & Francis, 2000), this study uses absolute discretionary accruals as a proxy for audit quality. Boone et al. (2015) argue that higher absolute discretionary accruals indicate a lower quality of financial statements. Piot and Janin (2007) distinguish between
discretionary accruals and absolute discretionary accruals. They point out that while discretionary accruals are used as a proxy for conservatism, the latter are used as a proxy for a tendency towards earnings management. Furthermore, Becker et al. (1998) argue that absolute discretionary accruals are an indicator of the level of discretion that is exercised in earnings. Moreover, Francis et al. (1999, p. 21) argue that, as previous literature provides evidence that management engages in income-increasing and decreasing, depending on the particular circumstances, absolute discretionary accruals are “the appropriate measure of the extent to which potential earnings management behavior could be occurring”. Hence, absolute discretionary accruals are adopted to capture the size of the variance in earnings instead of the direction of earnings management.

5.6.2 Earnings management measurement for IPOs

As mentioned above, this study applies a cross-sectional method, using Kothari et al. (2005) to estimate discretionary accruals. Nevertheless, Ball and Shivakumar (2008) highlight that applying the modified Jones model using the previous year’s assets as a deflator inflates the estimated discretionary accruals. They point out that IPO firms invest the proceeds from an IPO in their assets and, therefore, the assets at the end of the IPO year are far higher than prior to the IPO year. Therefore, they propose a modification to the Jones model to account for IPO context by using the average of current and previous year total assets instead of the previous year’s total assets, as follows:

\[
\frac{CURRACC_{j,t}}{AverTAS_{j,(t+t_{-1})/2}} = a_0 + \beta_1 \left( \frac{1}{AverTAS_{j,(t+t_{-1})/2}} \right) + \beta_2 \left( \frac{\Delta REVE_{j,t}}{AverTAS_{j,(t+t_{-1})/2}} \right) + \beta_3 ROASST_{j,(t+t_{-1})/2} + \epsilon_{j,t} \quad (16)
\]

Where:

\( AverTAS_{j,(t+t_{-1})/2} \) = Firm’s average total assets.

\( ROASST_{j,(t-1)} \) = Firm’s average return on assets; the other variables are defined in equations (3) and (12).
The coefficients from the previous equation are used to estimate non-discretionary accruals, as follows:

\[
NDISCA_{j,t} = \beta_0 + \beta_1 \left( \frac{1}{AverTAS_j, (t+t-1)/2} \right) \beta_2 \left[ \frac{\Delta REVE_{j,t} - \Delta RECE_{j,t}}{AverTAS_j, (t+t-1)/2} \right] \\
+ \beta_3 ROAST_{j, (t+t-1)/2} 
\] (17)

*All variables are defined in equations (3), (6), (14) and (16).*

Discretionary accruals are then calculated as follows:

\[
DCURRA_{j,t} = \left( \frac{CURRACC_{j,t}}{AverTAS_j, (t+t-1)/2} \right) - NDISCA_{j,t} 
\] (18)

*All variables are defined in equations (12), (14), (15) and (16).*

The above methodology has been applied by recent IPO research, such as Armstrong et al. (2015) and Alhadab et al. (2015) and, therefore, this study also applies it. Furthermore, this research adopts a current version of the Kothari et al. (2005) model to examine both current and long-term discretionary accruals.

Applying the cross-sectional method requires running an estimation model yearly for each industry. However, the estimation model in this study is run yearly instead of on an industry basis due to the small number of firms that were traded on the SSM in the early years (e.g., 44 non-financial firms in 2004). In other words, the year itself is considered as a portfolio. Previous literature requires an industry to comprise at least six firms to run an estimation model on an industry basis (e.g., DeFond and Jiambalvo (1994)). Running an estimation model on an industry basis also excludes some IPO firms, as it omits some industries that do not meet the minimum requirement set by the literature. Furthermore, this methodology is consistent with Roosenboom et al. (2003), Park and Park (2004) and Ball and Shivakumar (2006). To estimate discretionary accruals accurately, the first three years from the IPO year are excluded from the estimation model. There are two lock-up periods for firms listed on the SSM: for firms listed as IPOs, the lock-up period is six

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18 This study follows the Industry Classification Benchmark (ICB) for defining a non-financial industry.
months, and for firms that start as public firms without any previous operation, the lock-up period is three years. Therefore, the first three years are excluded. Furthermore, excluding three years is consistent with prior literature\textsuperscript{19} such as (Ahmad-Zaluki, Campbell, & Goodacre, 2011).

5.7 Independent Variables Measurement

5.7.1 Independent variables for audit quality model

To examine the difference in audit quality between Big 4 and non-Big 4 auditors, a dummy variable is created that takes ‘1’ if a firm is audited by one of the Big 4 (KPMG, EY, Deloitte or PwC) and ‘0’ otherwise. This measurement is consistent with previous studies (e.g. Becker et al., 1998; Chen et al., 2011; Myers et al., 2003; Piot, 2001). As this study hypothesises that the Big 4 do not differ from non-Big 4 accounting firms, this research does not predict an association between discretionary accruals and the Big 4 variable due to the ban placed on one of the Big 4.

As one of the objectives of this study is to examine the audit quality of Deloitte, a dummy variable is created that takes ‘1’ if the firm is audited by Deloitte and ‘0’ otherwise. This measurement follows studies that examine audit quality for a specific audit firm (e.g. Boone et al., 2015; Cahan & Zhang, 2006; Nagy, 2005). As a result of the ban placed on Deloitte by the CMA, this research hypothesises a positive association between discretionary accruals and Deloitte.

5.7.2 Independent variables for IPO model

Five dummy variables were created to testing the IPO hypotheses. The first dummy takes ‘1’ for the year before listing and ‘0’ otherwise. The second dummy takes ‘1’ for the year of listing, ‘0’ otherwise. A positive relationship is expected between discretionary accruals and the two dummy variables for the year before listing and the year of listing.

\textsuperscript{19} Prior literature varies from one year to five years, without giving any justification.
as this study hypothesises that IPO firms engage in earnings management in the pre-IPO year and the IPO year. The third dummy takes ‘1’ if the firm is audited by one of the Big 4 auditors and ‘0’ otherwise. This study expects a negative association between Big 4 auditing firms and pre-IPO discretionary accruals, as Saudi IPOs audited by the Big 4 auditing firms use auditor reputation as a signal to distinguish their own from low-quality firms. The fourth dummy takes ‘1’ if the firm is audited by Deloitte and ‘0’ otherwise. The fifth dummy takes ‘1’ if the firm is audited by one of the Big 3 auditors (KPMG, EY, or PwW) and ‘0’ otherwise. As a result of the ban on Deloitte due to the collapse of an IPO firm (the Al-Mojil Group), this research anticipates a positive association between pre-IPO discretionary accruals and Deloitte.

These measurements are consistent with prior studies (e.g. Alhadab et al., 2015; Armstrong et al., 2015; Gounopoulos & Pham, 2017; Rakhman, 2013; Vinten et al., 2005).

5.8 Control Variables

To provide more precise results, this study includes a number of firm financial characteristics as control variables that have an impact on discretionary accruals. Johnson et al. (2002) state the importance of using control variables, as they argue that some variables, other than the primary variable, may cause differences in the independent variable. Myers et al. (2003) also argue that models without control variables may lead the primary variable to serve as a proxy for other factors that determine the independent variable. Thus, this study uses several control variables. Following relevant previous studies, nine control variables were chosen: firm size, firm leverage, firm growth, cash flow, firm performance (two variables), firm age, SEO, and complexity.
Firm size

Most earnings management researchers use firm size as one of the control variables (e.g., Balsam et al., 2003; He, 2016; Liu & Lu, 2007). Firm size is measured by the natural logarithm of total assets. Becker et al. (1998) argue that size has a potential impact on discretionary accruals selection, as they believe that the motivation for engaging in earnings management is less in large firms, which are monitored indirectly by outsiders such as financial analysts.

Consistent with this view, Dechow and Dichev (2002) find that quality of accruals is associated positively with size (the larger the size, the fewer the discretionary accruals reported). Xie et al. (2003) find that the size of discretionary current accruals is high in smaller firms. They conclude that larger firms are subject to strict scrutiny and, therefore, engagement in earnings management is less.

However, Lobo and Zhou (2006) point out that the impact of size on earnings management could be either positive or negative. They argue that large firms could face great pressure from outsiders because of their market influences, and thus have no motivation to manage earnings. Alternatively, large firms could manage earnings due to the ramifications for their operation and outsiders may not be able to spot any earnings manipulation. Following the above arguments, this study does not predict the direction of the effect of size on earnings management.

Firm leverage

DeFond and Jiambalvo (1994) provide evidence that firms that are near to violating a debt agreement manipulate both current and long-term discretionary accruals. A large number of studies find a positive association between leverage and discretionary accruals, as they argue that firms that have a high leverage ratio are more motivated to conduct income-increasing discretionary accruals to evade the consequences of violating a debt agreement
According to these studies, leverage is defined as ‘long-term debt divided by total assets’. However, DeFond and Subramanyam (1998) find discretionary accruals are negatively associated with leverage.

This research predicts a positive association between positive discretionary accruals and leverage following the notion that firms with high leverage conduct income-increasing activities. It also predicts a negative association with income-decreasing, as DeFond and Jiambalvo (1994) argue that firms in financial crisis engage in income-decreasing to benefit from debt agreement renegotiations.

**Firm growth**

Managers are keen to have steady growth in order to achieve targets, as bonuses are received when a certain performance is achieved (Bens et al., 2002). In addition, Skinner and Sloan (2002) believe that the motivations behind meeting income forecasts are high in growth firms, as there is a strong reaction from the market if they do not meet the forecasts. Matsumoto (2002) also contends that managers engage in accruals income-increasing to evade unexpected income loss. Smith and Watts (1992) believe that the flexibility of accounting choices is greater in growth firms. This may be because of the weakness of internal controls, as Hall and Renner (1988) contend that weak internal controls exist in this type of firm.

Several studies find a positive correlation between growth and earnings management (e.g., DeFond et al., 1998; Wild, 1996). In contrast, a finding by Behn, Jong-Hag, and Kang (2008) proposes a negative correlation between them. Following DeFond and Subramanyam (1998) definition of growth, it is the difference between the current and total assets of the preceding year divided by the prior year’s total assets. Following the
argument of Matsumoto (2002) and Smith and Watts (1992), this research predicts a positive association between discretionary accruals and firm growth.

**Cash flow**

Numerous studies document the negative relationship between operating cash flow and both discretionary and absolute discretionary accruals (e.g. Boone et al., 2015; Dechow et al., 1995; Francis & Dechun, 2008; Myers et al., 2003; Nagy, 2005).

Frankel, Johnson, and Nelson (2002) argue that better performance is associated with higher operating cash flow and, therefore, this study considers the differences in performance between firms by controlling for operating cash flow. Following prior studies, such as Nagy (2005), operating cash flow is scaled by the total assets of the preceding year. This research predicts a negative association between absolute discretionary accruals and operating cash flow.

**Firm performance**

Many studies find that firm performance is positively correlated with earnings management (e.g. Cohen & Zarowin, 2010). The literature also offers the following definitions of firm performance: a change in operating income in absolute value divided by fiscal year total assets (e.g. He, 2016) and income before extraordinary items divided by the prior year’s total assets (e.g. Jaggi et al., 2009). This study adopts the latter definition to avoid heteroscedasticity and autocorrelation in the models. Studies such as Jaggi et al. (2009) and Wuchun, Ling Lei, and Mikhail (2011) apply the latter definition as a control variable. This research predicts a positive association between absolute discretionary accruals and firm performance.

This research also controls for negative performance, following Chen et al. (2011), Francis and Dechun (2008), Klein (2002) and Krishnan (2003b). A dummy variable is created by taking ‘1’ if the firm reports negative income during the fiscal year and ‘0’
otherwise. Francis and Dechun (2008) argue that firms with negative income are motivated to engage in earnings management. Therefore, this research predicts a positive association between discretionary accruals and negative income.

**Firm age**

Myers et al. (2003) argue that the life cycle of firms has an impact on discretionary accruals. Studies such as Gul, Fung, and Jaggi (2009), Myers et al. (2003), Shust (2015) and Yuan et al. (2016) control for age and find a negative association between absolute discretionary accruals and age. This result suggests that the greater the age, the less the engagement in earnings management. Following Shust (2015) and Yuan et al. (2016), this research defines age as the natural logarithm of a firm’s years since it became a public company. This research predicts a negative association between absolute discretionary accruals and age.

**Seasoned equity offering (SEO)**

Issuing SEOs may motivate a firm’s management to engage in opportunistic earnings behaviours. Teoh et al. (1998a) report that SEO firms had higher income growth in the year of issue. Therefore, this research controls for SEOs to eliminate any discretionary accruals activities that may have an impact on the main test variable. Following Francis et al. (1999), a dummy variable was created by taking ‘1’ if the firm issues an SEO and ‘0’ otherwise. This research predicts a positive association between absolute discretionary accruals and SEO.

**Complexity**

Dyreng, Hanlon, and Maydew (2012) provide evidence that firms that have foreign subsidiaries in a less strict legal environment engage in earnings management. In the sample for this study, 45% of the firm-year observations have subsidiaries. Therefore,
following Cameran, Francis, Marra, and Pettinicchio (2015) and Dyreng et al. (2012), this research controls for complexity by creating a dummy variable that takes ‘1’ if the firm has a subsidiary and ‘0’ otherwise. This research predicts a positive association between positive discretionary accruals and complexity.

5.9 Multiple Regression Model

This study adopts OLS regression to test the research hypotheses related to earnings management. The research design of this study for testing earnings management follows McNichols and Wilson (1988), who introduced this type of research design. They propose a linear model to test earnings management, as follows:

\[ DISACC_{jt} = a_0 + \beta_1 DUM + \epsilon_{jt} \]  
(20)

Where:

\( DUM \) = A dummy variable that divides the sample into two sets: one is given to the set for which earnings management is predicted; all the other variables are defined in equation (1).

However, Dechow et al. (1995) argue that variables that may have an impact on discretionary accruals should be included in the model, as follows:

\[ DISACC_{jt} = a_0 + \beta_1 DUM + \beta_1 CON + \epsilon_{jt} \]  
(21)

Where:

\( CON \) = Control variables that may impact on discretionary accruals; all the other variables are defined in equations (1) and (20).

This research follows the research design of Dechow et al. (1995) due to the importance of using control variables, as explained in section 5.8. The following sub-sections demonstrate the multiple regression models that are used to test the hypotheses of this research.

5.9.1 Multiple regression models for audit quality

The following models are used to test the research hypotheses that relate to audit quality and earnings management and follow prior research (e.g. Becker et al., 1998; Boone et al.,
The following model is used to test hypothesis H1:

$$ADISACC_{jt} = \beta_0 + \beta_1 BIGAUD + \beta_2 LOGA + \beta_3 LAGE + \beta_4 LEVE + \beta_5 ROA + \beta_6 NEG + \beta_7 SEO + \beta_8 CFL + \beta_9 ASGR + \beta_{10} COMLX + \text{Years Dummy} + \text{Industry Dummy} + \epsilon_{jt} \quad (22)$$

Where:

- **ADISACC** = Absolute discretionary accruals.
- **BIGAUD** = A dummy variable that takes ‘1’ if the firm is audited by one of KPMG, EY, Deloitte or PwC; ‘0’ otherwise.
- **LOGA** = The natural logarithm of fiscal year total assets.
- **LAGE** = The natural logarithm of a firm’s years since it became a public company.
- **LEVE** = Long-term debt divided by total assets.
- **ROA** = Income before extraordinary items divided by the prior year’s total assets.
- **NEG** = A dummy variable that takes ‘1’ if the firm reports negative income and ‘0’ otherwise.
- **SEO** = A dummy variable that takes ‘1’ if the firm issues an SEO and ‘0’ otherwise.
- **CFL** = Operating cash flow is divided by the prior year’s total assets.
- **ASGR** = The difference between the current and the prior years’ total assets divided by the prior year’s total assets.
- **COMLX** = A dummy variable that takes ‘1’ if the firm has at least one subsidiary and ‘0’ otherwise.

To test H2, all firms audited by non-Big 4 auditors are excluded in order to examine whether Deloitte provides less audit quality compared with the rest of the Big 4, following prior research such as Boone et al. (2015). The following model is used to test hypothesis H2:

$$ADISACC_{jt} = \beta_0 + \beta_1 DELO + \beta_2 LOGA + \beta_3 LAGE + \beta_4 LEVE + \beta_5 ROA + \beta_6 NEG + \beta_7 SEO + \beta_8 CFL + \beta_9 ASGR + \beta_{10} COMLX + \text{Years Dummy} + \text{Industry Dummy} + \epsilon_{jt} \quad (23)$$

Where:

- **DELO** = A dummy variable that takes ‘1’ if the firm is audited by Deloitte and ‘0’ otherwise; all the other variables are defined in equation (22).
5.9.2 Multiple regression models for IPOs

This study follows Alhadab et al. (2016), Chahine, Arthurs, Filatotchev, and Hoskisson (2012) and Morsfield and Tan (2006), who adopted this type of research design in the context of IPOs by restricting the sample to IPO firms.

The following model is designed to test pre-listing earnings management (H3):

\[
CURRACC_{j,t} = \beta_0 + \beta_1 \text{IPO}_B + \beta_2 \text{LOGA} + \beta_3 \text{LEVE} + \beta_4 \text{ROA} + \beta_5 \text{NEG} + \beta_6 \text{CFL} + \beta_7 \text{ASGR} + \text{Years Dummy} + \text{Industry Dummy} + \epsilon_{j,t} \quad (24)
\]

Where:
- \(CURRACC = \text{Current discretionary accruals.}\)
- \(\text{IPO}_B = \text{A dummy variable that takes ‘1’ for a pre-IPO year and ‘0’ otherwise; all the other variables are defined in equation (22).}\)

To test the engagement of earnings management in the year of listing (H4), this study follows the argument of Armstrong et al. (2015) that the existence of discretionary accruals in an IPO year shown in previous studies is due to not controlling for cash proceeds during an IPO. Therefore, this research controls for cash proceeds during an IPO as follows:

\[
CURRACC_{j,t} = \beta_0 + \beta_1 \text{IPO}_Y0 + \beta_2 \text{proceed} + \beta_3 \text{LOGA} + \beta_4 \text{LEVE} + \beta_5 \text{ROA} + \beta_6 \text{NEG} + \beta_7 \text{CFL} + \beta_8 \text{ASGR} + \text{Years Dummy} + \text{Industry Dummy} + \epsilon_{j,t} \quad (25)
\]

Where:
- \(\text{IPO}_Y0 = \text{A dummy variable that takes ‘1’ for an IPO year and ‘0’ otherwise.}\)
- \(\text{Proceed} = \text{Cash proceeds during an IPO divided by average total assets; all the other variables are defined in equations (22) and (23).}\)

The following model is designed to test audit quality for the years before an IPO year (H5) as follows:

\[
CURRACC_{j,t} = \beta_0 + \beta_1 \text{IPO}_{\text{Big}4} + \beta_2 \text{LOGA} + \beta_3 \text{LEVE} + \beta_4 \text{ROA} + \beta_5 \text{NEG} + \beta_6 \text{CFL} + \beta_7 \text{ASGR} + \text{Years Dummy} + \text{Industry Dummy} + \epsilon_{j,t} \quad (26)
\]

Where:
- \(\text{IPO}_{\text{Big}4} = \text{A dummy variable that takes ‘1’ if the firm is audited by one of the Big 4 and ‘0’ otherwise; all the other variables are defined in equations (22) and (23).}\)
The following model is designed to test the audit quality of Deloitte for the years before an IPO year (H6):

\[ \text{CURRACC}_{j,t} = \beta_0 + \beta_1 \text{IPO}_{\text{Deoitte}} + \beta_2 \text{IPO}_{\text{Big3}} + \beta_3 \text{LOGA} + \beta_4 \text{LEV} + \beta_5 \text{ROA} + \beta_6 \text{NEG} + \beta_7 \text{CFL} + \beta_8 \text{ASGR} + \text{Years Dummy} + \text{Industry Dummy} + \epsilon_{j,t} \]  

(26)

Where:

\( \text{IPO}_{\text{DELO}}^{20} = \) A dummy variable that takes ‘1’ if the firm is audited by Deloitte and ‘0’ otherwise; all the other variables are defined in equations (22) and (23).

\( \text{IPO}_{\text{Big3}} = \) A dummy variable that takes ‘1’ if the firm is audited by one of KPMG, EY or PwC and ‘0’ otherwise; all the other variables are defined in equations (22) and (23).

Table 1 presents a summary of the variables used in this study.

### Table 1 Summary of variables

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Definition</th>
<th>Measurement</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADISACC</td>
<td>Absolute discretionary accruals</td>
<td>The absolute value of discretionary accruals measured using the Kothari et al. (2005) model.</td>
<td>Dependent variable</td>
</tr>
<tr>
<td>CURRACC</td>
<td>Current discretionary accrual</td>
<td>Current discretionary accruals measured using the Kothari et al. (2005) model.</td>
<td>Dependent variable</td>
</tr>
<tr>
<td>BIGAUD</td>
<td>Big 4 auditors</td>
<td>A dummy variable that takes ‘1’ if the firm is audited by one of KPMG, EY, Deloitte or PwC and ‘0’ otherwise.</td>
<td>Independent variable</td>
</tr>
<tr>
<td>DELO</td>
<td>Deloitte audit firm</td>
<td>A dummy variable that takes ‘1’ if the firm is audited by Deloitte and ‘0’ otherwise.</td>
<td>Independent variable</td>
</tr>
<tr>
<td>IPO_B</td>
<td>The year before the listing year</td>
<td>A dummy variable that takes ‘1’ for a pre-IPO year and ‘0’ otherwise.</td>
<td>Independent variable</td>
</tr>
<tr>
<td>IPO_Y0</td>
<td>The year of listing</td>
<td>A dummy variable that takes ‘1’ for an IPO year and ‘0’ otherwise.</td>
<td>Independent variable</td>
</tr>
</tbody>
</table>

---

20 Deloitte cannot be examined among the Big 4 as in equation 23 due to the sample size. Two dummy variables were created in order to overcome this weakness: one for Deloitte and one for the rest of the Big 4.
<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>IPO_Big4</td>
<td>Big 4 auditors in the years before listing</td>
<td>Independent</td>
</tr>
<tr>
<td>IPO_DELO</td>
<td>Deloitte in the years before listing</td>
<td>Independent</td>
</tr>
<tr>
<td>IPO_Big3</td>
<td>Big 3 auditors (Deloitte excluded) in the years before listing</td>
<td>Independent</td>
</tr>
<tr>
<td>LOGA</td>
<td>Firm size</td>
<td>Control</td>
</tr>
<tr>
<td>LEVE</td>
<td>Firm leverage</td>
<td>Control</td>
</tr>
<tr>
<td>ASGR</td>
<td>Firm growth</td>
<td>Control</td>
</tr>
<tr>
<td>CFL</td>
<td>Cash flow</td>
<td>Control</td>
</tr>
<tr>
<td>ROA</td>
<td>Firm performance (1)</td>
<td>Control</td>
</tr>
<tr>
<td>NEG</td>
<td>Firm performance (2)</td>
<td>Control</td>
</tr>
<tr>
<td>LAGE</td>
<td>Firm age</td>
<td>Control</td>
</tr>
<tr>
<td>SEO</td>
<td>Seasoned equity offering</td>
<td>Control</td>
</tr>
<tr>
<td>COMLX</td>
<td>Complexity</td>
<td>Control</td>
</tr>
</tbody>
</table>

**5.10 Sample Selection Criteria**

**5.10.1 Sample selection and data collection – audit quality**

The sample for testing the audit quality hypotheses includes all Saudi firms listed on the SSM. The sample is restricted to the period from 2004 to 2014. This period was chosen.
for two reasons: (1) annual reports are unavailable before 2004, and (2) the ban on Deloitte started in June 2015.

Several criteria were chosen that a firm must meet to be included in the sample. These criteria are: (1) the firm’s fiscal year must end on 31 December; (2) availability of annual reports; (3) following previous literature (i.e. Mouselli, Jaafar, & Hussainey, 2012; Zalata & Roberts, 2017), financial sectors, for example, banks and insurance companies, are excluded from the sample. Financial sectors also have specific reporting criteria and hence different financial reporting practices21 (Saudi Arabian Monetary Authority [SAMA], 2009). Following Alotaibi and Hussainey (2016), the Industry Classification Benchmark (ICB) is used to define sectors. Therefore, the real estate sector is not included in the sample as it is considered a financial sector under the ICB; and (4) consistent with Cohen and Zarowin (2010), Shust (2015) and Yuan et al. (2016), the sample is restricted to a minimum of eight observations for each industry per year.

Eighty-five firms (Table 2) met these criteria, which produced 591 observations for the period 2004–2014. Annual reports were downloaded from the Argaam website22 (www.argaam.com). All financial statement data was manually collected from the annual reports.23

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21 Banks and insurance firms are required by SAMA to apply international financial reporting standards (IFRS) instead of local standards.

22 The official website of the Saudi Stock Market (www.tadawul.com.sa) only provides data for the last five years.

23 At the beginning, the researcher used Datastream to collect the data for this study. A lot of data were missing. The researcher started collecting the missing data from annual reports but noticed that some of the figures obtained from Datastream were different from the information in the annual reports. The researcher contacted Datastream to discuss this issue. They replied that “we do some adjustments, as per our collection policies”. Therefore, the researcher collected the data manually.
Table 2 Sample selection for audit quality

<table>
<thead>
<tr>
<th>Total number of firms listed until December 2014</th>
<th>168</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minus: excluded firms</td>
<td></td>
</tr>
<tr>
<td>Financial (according to ICB classification)</td>
<td>62</td>
</tr>
<tr>
<td>Missing reports</td>
<td>1</td>
</tr>
<tr>
<td>Ending in March</td>
<td>3</td>
</tr>
<tr>
<td>Do not meet criteria for a minimum of eight observations in each industry per year</td>
<td>17</td>
</tr>
<tr>
<td>Total excluded firms</td>
<td>(83)</td>
</tr>
<tr>
<td><strong>Final selected sample</strong></td>
<td>85</td>
</tr>
</tbody>
</table>

Table 3 shows the industry distribution for the sample regarding audit quality. This sample contains four industries: basic materials, industrial, consumer goods and consumer services. The industrial industry dominates the sample, as it has the highest percentage (35%). The basic materials industry accounts for 27% of the sample. The two industries with the smallest proportions are consumer goods and consumer services, as they account for 20% and 18% of the sample, respectively.

Table 3 Industry distribution 2004–2014

<table>
<thead>
<tr>
<th>Industry</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic materials</td>
<td>23</td>
<td>27</td>
</tr>
<tr>
<td>Industrial</td>
<td>30</td>
<td>35</td>
</tr>
<tr>
<td>Consumer goods</td>
<td>17</td>
<td>20</td>
</tr>
<tr>
<td>Consumer services</td>
<td>15</td>
<td>18</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>85</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

5.10.2 Sample selection and data collection – IPO

The sample for testing earnings management around the IPO hypotheses includes all firms that went public on the SSM during the period 2005–2015. This period was chosen for two reasons: (1) prospectuses were not available before 2005, and (2) 2016 is not
included in the sample, as one year after listing is required to make a comparison between the listing year and the year after the year of listing.

In addition to criteria (1) and (3) in the audit quality sample, two years of financial statements must be available in the prospectuses to test earnings management for a pre-IPO year and audit quality for pre-IPO financial statements.

Forty-two firms met these criteria for the period 2004–2015 (Table 4). Annual reports were downloaded from the Argaam website (www.argaam.com), whereas prospectuses were downloaded from the official website of the CMA. All financial statement data were collected manually from annual reports and prospectuses.

Table 4 Sample selection for IPOs

| Total number of IPO firms until December 2015 | 58 |
| Less: excluded firms | |
| Financial | 6 |
| Real estate | 2 |
| Firms providing one year of financial reporting in the prospectus | 4 |
| Ending in March | 4 |
| Total excluded firms | (16) |
| **Final selected sample** | **42** |

Table 5 shows the time distribution of the IPO sample during 2005–2015. The highest number of firms to go public is six, which occurs in 2006, 2007, 2008 and 2012. In contrast, the lowest number of firms to go public is two and occurs in 2009 and 2011.

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24 [www.cma.org.sa](http://www.cma.org.sa)
Table 5 Time distribution of the IPO sample 2005–2015

<table>
<thead>
<tr>
<th>Year</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>1</td>
<td>0.02</td>
</tr>
<tr>
<td>2006</td>
<td>6</td>
<td>0.14</td>
</tr>
<tr>
<td>2007</td>
<td>6</td>
<td>0.14</td>
</tr>
<tr>
<td>2008</td>
<td>6</td>
<td>0.14</td>
</tr>
<tr>
<td>2009</td>
<td>2</td>
<td>0.05</td>
</tr>
<tr>
<td>2010</td>
<td>4</td>
<td>0.10</td>
</tr>
<tr>
<td>2011</td>
<td>2</td>
<td>0.05</td>
</tr>
<tr>
<td>2012</td>
<td>6</td>
<td>0.14</td>
</tr>
<tr>
<td>2013</td>
<td>3</td>
<td>0.07</td>
</tr>
<tr>
<td>2014</td>
<td>3</td>
<td>0.07</td>
</tr>
<tr>
<td>2015</td>
<td>3</td>
<td>0.07</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>42</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

5.11 Summary

This chapter provides an overview of the research philosophy positions in the social sciences: phenomenology and positivism. The latter is adopted in this study due to the absolute separation between the researcher and the subject. The quantitative method is chosen from the three strategies available for use (quantitative, qualitative and mixed methods). As this research adopts theories from which hypotheses are developed, the deductive approach is used.

This chapter also demonstrates the measurements for the discretionary accruals that are used as proxies for earnings management through illustrating prior research that developed and improved the measurements. The Kothari model is used in this research to estimate non-discretionary accruals for both versions: long-term and current accruals. The Kothari model is preferred over other models as it demonstrates that the Jones and modified Jones models suffer from heteroscedasticity and errors in the measurement of discretionary accruals. A cross-sectional method is adopted to estimate non-discretionary
accruals, as previous researchers have shown that the cross-sectional method produces more accurate estimates.

As a consequence of the importance of using control variables in providing more precise results, this study adopts several of the control variables used by prior studies and which may cause differences in the independent variable: firm size, cash flow, firm leverage, firm performance, firm growth, firm age, SOE and complexity. Moreover, this study excludes the financial and real estate sectors because of their different financial reporting practices. The next chapter discusses the empirical findings.
Chapter 6: Empirical Findings

6.1 Introduction

The previous chapter provides a discussion of the research methodology and methods used in this study. As mentioned in the preceding chapter, OLS regression is used as a method of data analysis. Six models were adopted to test the research hypotheses; hence, this chapter presents the results of testing using these models.

This chapter is divided into two main sections. The first section (6.2) shows the results concerning audit quality in Saudi Arabia. This section is divided into six sub-sections, as follows: section 6.2.1 presents the descriptive statistics of the sample used to test audit quality; section 6.2.2 shows the correlation matrix; section 6.2.3 presents the results of testing normality, multicollinearity, heteroscedasticity and autocorrelation; section 6.2.4 presents and discusses the results of testing the audit quality of the Big 4; Section 6.2.5 presents and discusses the results of testing the audit quality of Deloitte; and section 6.2.6 discusses the results of audit quality within the context of Saudi Arabia.

The second section (6.3) shows the results concerning earnings management in IPO firms and the audit quality of these firms. This section is divided into eight sub-sections, as follows: section 6.3.1 presents the descriptive statistics for the IPO sample; section 6.3.2 shows the correlation matrix for the IPO sample; section 6.3.3 shows the results of testing normality, multicollinearity, heteroscedasticity and autocorrelation; section 6.3.4 presents the results of testing earnings management in the pre-listing year; section 6.2.5 presents the results of testing for earnings management in the listing year; section 6.2.6 presents the results of testing the audit quality in pre-listing years; section 6.2.7 shows the results of testing the audit quality of Deloitte and the Big 3 versus non-Big 4 firms in pre-listing years; and 6.3.8 discusses the results related to earnings management in IPO firms in Saudi Arabia.
6.2 Empirical 1: Earnings Management and Audit Quality

6.2.1 Descriptive statistics

Table 6 presents a summary of the descriptive statistics for all the variables (dependent, independent and control) used to examine the audit quality in Saudi Arabia, in which absolute discretionary accruals (ADISACC) is the dependent variable and Big 4 auditors (BIGAUD) and Deloitte auditor (DELO) are the independent variables.

Table 6 Descriptive statistics of the audit quality sample

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Std. deviation</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADISACC</td>
<td>591</td>
<td>0.0477</td>
<td>0.0433</td>
<td>0.0001</td>
<td>0.2365</td>
</tr>
<tr>
<td>NEG</td>
<td>591</td>
<td>0.1506</td>
<td>0.3580</td>
<td>0.0000</td>
<td>1.0000</td>
</tr>
<tr>
<td>ASGR</td>
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<td>0.0803</td>
<td>0.1561</td>
<td>-0.2245</td>
<td>0.7424</td>
</tr>
<tr>
<td>CFL</td>
<td>591</td>
<td>0.1067</td>
<td>0.1162</td>
<td>-0.1941</td>
<td>0.4141</td>
</tr>
<tr>
<td>ROA</td>
<td>591</td>
<td>0.0839</td>
<td>0.1013</td>
<td>-0.1813</td>
<td>0.3642</td>
</tr>
<tr>
<td>SEO</td>
<td>591</td>
<td>0.0152</td>
<td>0.1226</td>
<td>0.0000</td>
<td>1.0000</td>
</tr>
<tr>
<td>LEVE</td>
<td>591</td>
<td>0.1011</td>
<td>0.1360</td>
<td>0.0000</td>
<td>0.5697</td>
</tr>
<tr>
<td>LAGE</td>
<td>591</td>
<td>2.6238</td>
<td>0.8812</td>
<td>0.6931</td>
<td>3.9890</td>
</tr>
<tr>
<td>COMLX</td>
<td>591</td>
<td>0.4501</td>
<td>0.4979</td>
<td>0.0000</td>
<td>1.0000</td>
</tr>
<tr>
<td>LOGA</td>
<td>591</td>
<td>14.1985</td>
<td>1.5523</td>
<td>11.0870</td>
<td>19.4204</td>
</tr>
<tr>
<td>BIGAUD</td>
<td>591</td>
<td>0.5736</td>
<td>0.4950</td>
<td>0.0000</td>
<td>1.0000</td>
</tr>
<tr>
<td>DELO</td>
<td>591</td>
<td>0.1675</td>
<td>0.3737</td>
<td>0.0000</td>
<td>1.0000</td>
</tr>
</tbody>
</table>

ADISACC: absolute discretionary accruals; NEG: negative income; ASGR: assets growth; CFL: ratio of operating cash flow; ROA: return on assets; SEO: seasoned equity offering; LEVE: leverage; LAGE: log of firm’s age; COMLX: complexity; LOGA: log of total assets - firm size; BIGAUD: Big 4 auditors; DELO: Deloitte auditor.

As shown in Table 6, the mean value of absolute discretionary accruals (ADISACC) is 0.0477, with a standard deviation of 0.0433. The table also shows the existence of a large variation in absolute discretionary accruals in the study sample, with a minimum of 0.0001 and a maximum of 0.2365. The minimum value is almost zero, which indicates

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25 To minimise the influence of outliers, all continuous variables are Winsorised at the top 1% and bottom 99%. This treatment of outliers follows previous earnings management literature (e.g. Alhadab et al., 2016; Zalata & Roberts, 2017).
that some firms do not manage earnings. Using a sample of 337 observations from Saudi Arabia, Habbash and Alghamdi (2016) report that the mean value of absolute discretionary accruals is 0.103, with a minimum value of zero and a maximum value of 0.782. They also report a standard deviation of 0.140, which is higher than the value reported in the current study. This indicates that the variation in absolute discretionary accruals in their sample is far higher than in this sample. The mean value of Big 4 auditors is 0.5736, which indicates that 57.36% (339 observations) of the firm-year observations in the sample were audited by one of the Big 4. The mean value of Big 4 auditors in this study is close to the values reported by Habbash and Alghamdi (2016) and Gomaa (2013), which were 60.8% and 64.1%, respectively. The mean value of Deloitte auditor is 0.1675, which indicates that 16.75% (99 observations) of the firm-year observations in the sample were audited by Deloitte. This also indicates that around 29% of the firms audited by the Big 4 were audited by Deloitte.

The descriptive statistics of firm characteristics used as control variables in the first model are as follows. Negative income (NEG) has a minimum value of ‘0’ and a maximum value of ‘1’, as it is a dummy variable. The mean value of NEG is 0.1506, which indicates that 15.06% of the firms in the sample reported negative income. The mean value of NEG is lower than the value of 24% reported by (Francis & Yu, 2009). Assets growth (ASGR) has a mean value of 0.0803, which indicates the average growth of assets in the study sample is 8.03%. The minimum and maximum values of ASGR are -0.2245 and 0.7424, respectively. The value of the mean is close to the value of 0.0723 reported by Boone et al. (2015).

Ratio of operating cash flow (CFL) has a mean value of 0.1067, which is close to the value of 0.086 reported by Habbash and Alghamdi (2016). The minimum value of CFL is also close to the value of -0.199 reported by them. However, the maximum value in this study is higher than the value of 0.361 reported in their study. Return on assets (ROA)
has a mean value of 0.0839, with a minimum value of -0.1813 and a maximum value of 0.3642. The mean value of ROA is higher than the value of 0.069 reported by (Habbash & Alghamdi, 2016). The seasoned equity offering (SEO) has a minimum value of zero and a maximum value of 1, as it is a dummy variable. The mean value of SEO is 0.0152, which indicates that 1.5% of the firms in the sample raised capital. Nevertheless, the mean value of SEO is far lower than the value of 0.17 reported by Francis et al. (1999).

The mean value of leverage (LEVE) is 0.1011, which indicates that, on average, 10.11% of total assets were funded from long-term debt in the study sample. However, the table shows the existence of a large variation in LEVE, with a minimum of zero and a maximum of 0.5697, which is close to the finding of (Habbash & Alghamdi, 2016).

Log of firm’s age (LAGE) has a mean value of 2.6238, with a minimum of 0.6931 and a maximum of 3.9890. The mean value of LAGE is close to the value of 2.6510 reported by Shust (2015). The mean value of complexity (COMLX) is 0.4501, which indicates that 45.01% of the firms in the study sample have at least one subsidiary firm. COMLX has a minimum value of zero and a maximum value of 1, as it is a dummy variable. The mean of this variable is almost the same as the value of 0.44 obtained by (Habbash & Alghamdi, 2016). Log of total assets (LOGA) has a mean value of 14.1985, with a minimum of 11.0870 and a maximum of 19.4204. The mean value of LOGA is higher than the value of 9.239 reported by (Habbash & Alghamdi, 2016). The maximum and minimum values of LOGA are 19.420 and 11.087, respectively, which are higher than the values reported by Habbash and Alghamdi (2016).

6.2.2 Correlation matrix

A problem of collinearity exists because of a high correlation among pairs of independent variables (Gujarati, 2004). This problem leads to the inability to isolate the effects of an independent variable that is correlated with another independent variable (Hill, Griffiths,
& Lim, 2014). Acock (2008) also argues that estimates might not be reliable when multicollinearity exists.

Using a correlation matrix is one statistical way to detect multicollinearity. The correlation matrix will also show the direction of the correlation between a pair of variables, as well as its strength. Variables are considered to be highly correlated when the correlation coefficient is greater than 0.80 (Gujarati, 2004). Therefore, if a correlation coefficient is less than 0.80, it can be said to fall within an acceptable level of multicollinearity. However, a correlation matrix does not detect any hidden correlation between independent variables (see the next section for more details).

Table 7 shows the Pearson’s correlation matrix for all the variables, dependent and independent. As can be seen in the table, the highest correlation coefficient is 0.67 and is relatively far from 0.8, which indicates no multicollinearity among the variables in the model.

The results show that a significant positive correlation exists between the dependent variable absolute discretionary accruals (ADISACC) and asset growth (ASGR), which indicates that firms that are in growth engage in earnings management. Moreover, the results show that a significant negative correlation exists between the dependent variable (ADISACC) and operating cash flow (CFL), which indicates that the better performance, the less engagement of earnings management. Also, there is a negative association between ADISACC and firm size, which indicates that firms that large in size do not engage in earnings management as they might be monitored indirectly by outsiders such as financial analysts.

In terms of the main test variable of the Big 4 (BIGAUD), there is a significant positive correlation between BIGAUD and leverage (LEVE), which indicates that firms that have long term debt intend to hire one the Big 4 accounting firm. Also, there is a significant
positive correlation between BIGAUD and complexity (COMLX), which indicates that firms that have at least one subsidiary intend to hire one of the Big 4 accounting firms. The results show that there is a significant positive correlation between BIGAUD and the log of total assets (LOGA), which indicates that firms that are large in size intend to hire one of the Big 4 accounting firms, as the Big 4 may have enough employees and resources to achieve the auditing work on time. The results show that there is a significant negative correlation between Deloitte (DELO) and log of age, which indicates that new listed firms intend to hire Deloitte.

The results show that there is a significant positive correlation between leverage (LEVE) and the log of total assets at 59% (1% significance level), which indicates that big firms tend to rely on long-term debt to fund asset purchases.
Table 7 Pearson’s correlation matrix for the audit quality sample

<table>
<thead>
<tr>
<th></th>
<th>ADISACC</th>
<th>NEG</th>
<th>ASGR</th>
<th>CFL</th>
<th>ROA</th>
<th>SEO</th>
<th>LEVE</th>
<th>LAGE</th>
<th>COMLX</th>
<th>LOGA</th>
<th>BIGAUD</th>
<th>DELO</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADISACC*</td>
<td>1</td>
<td>-0.04</td>
<td>0.15**</td>
<td>-0.19**</td>
<td>-0.03</td>
<td>0.07</td>
<td>-0.13**</td>
<td>-0.03</td>
<td>0.02</td>
<td>-0.18**</td>
<td>-0.10*</td>
<td>-0.03</td>
</tr>
<tr>
<td>NEG</td>
<td>1</td>
<td>-0.27**</td>
<td>-0.35**</td>
<td>-0.59**</td>
<td>0.06</td>
<td>0.06</td>
<td>0.09*</td>
<td>-0.07*</td>
<td>-0.18**</td>
<td>-0.11**</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>ASGR</td>
<td>1</td>
<td>0.05</td>
<td>0.30**</td>
<td>0.33**</td>
<td>0.16**</td>
<td>-0.18**</td>
<td>0.16**</td>
<td>0.14**</td>
<td>0.15**</td>
<td>0.09*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CFL</td>
<td>1</td>
<td>0.67**</td>
<td>-0.06</td>
<td>-0.12</td>
<td>0.01</td>
<td>-0.09*</td>
<td>0.14**</td>
<td>0.07</td>
<td>0.06</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ROA</td>
<td>1</td>
<td>-0.08</td>
<td>-0.18**</td>
<td>0.02</td>
<td>-0.05</td>
<td>0.14**</td>
<td>0.07</td>
<td>0.03</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SEO</td>
<td>1</td>
<td>0.05</td>
<td>0.01</td>
<td>0.05</td>
<td>0.02</td>
<td>0.02</td>
<td>0.03</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LEVE</td>
<td>1</td>
<td>-0.21**</td>
<td>0.28**</td>
<td>0.59**</td>
<td>0.33**</td>
<td>-0.03</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LAGE</td>
<td>1</td>
<td>-0.27**</td>
<td>-0.11**</td>
<td>0.33**</td>
<td>-0.23**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COMLX</td>
<td>1</td>
<td>0.42**</td>
<td>0.38**</td>
<td>0.06</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOGA</td>
<td>1</td>
<td>0.49**</td>
<td>0.05</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIGAUD</td>
<td>1</td>
<td>0.39**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DELO</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

** Correlation is significant at the 0.01 level.

* Correlation is significant at the 0.05 level.

Variables definitions are listed in table 6.
6.2.3 Normality, multicollinearity, heteroscedasticity and autocorrelation

One of the OLS assumptions is the normal distribution of residuals; this study does not meet this assumption. However, this does not prevent the researcher using OLS to test the relationship between the independent and dependent variables, as Hill, Griffiths, and Lim (2008) argue that consideration of this assumption is optional. They state that “the normality of least squares is of great importance in many aspects of statistical inference .... if the sample size is sufficient large\textsuperscript{26} then the least squares estimators have a distribution that approximates the normal distribution” (p. 33). Moreover, Gujarati (2004) points out that there is no need to meet the normality assumption “if our sole objective is point estimation of the parameters of the regression models” (p. 248). However, he also points out this assumption must be met if we make inferences from OLS. Gujarati (2009) states that when the assumptions of normality are met, “we can draw inferences about the true values of population” (p. 9). Therefore, as no inferences are made in this study and the object is to test the relationship between the independent and dependent variables, the assumption of the normal distribution of residuals is ignored. Furthermore, t-tests can be used to test the significance of the relationship between the independent and dependent variables, as Gujarati (2004) states that “the usual test procedures—the t and F tests—are still valid asymptotically, that is, in the large sample, but not in the finite or small samples” (p. 338). OLS still contains the best unbiased estimators (BUE) (Gujarati, 2009).

Another way of detecting multicollinearity is by running several auxiliary regressions. According to this method, each of the predictor variables is regressed on all the other predictor variables. Adkins and Hill (2012, p. 205) state that “Although no two variables may be highly correlated, several variables may be linearly related in ways that are not apparent”. Therefore, this method is more effective than Pearson’s correlation, as it

\textsuperscript{26} Hill et al. (2008) mention that some statisticians would say 30 observations is sufficient large, others would say 50 observations.
detects any hidden correlation between predictor variables. According to Adkins and Hill (2012), if R-squared is higher than 0.8, this is an indicator of strong collinearity. As can be seen from Table 8, the highest R-squared value in the auxiliary regressions is 65%, which indicates that it is free from high multicollinearity.

Table 8 Results of auxiliary regression for the audit quality sample

<table>
<thead>
<tr>
<th>Auxiliary regressions</th>
<th>R-squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td>0.33</td>
</tr>
<tr>
<td>Model 2</td>
<td>0.49</td>
</tr>
<tr>
<td>Model 3</td>
<td>0.65</td>
</tr>
<tr>
<td>Model 4</td>
<td>0.46</td>
</tr>
<tr>
<td>Model 5</td>
<td>0.14</td>
</tr>
<tr>
<td>Model 6</td>
<td>0.50</td>
</tr>
</tbody>
</table>

This study examines for heteroscedasticity, which occurs when the variance of the residuals is not constant (Hill et al., 2008). The importance of examining for the existence of heteroscedasticity is explained by Hill et al. (2008), who point out that “the least squares estimator is still a linear and unbiased estimator, but is no longer best” (p. 201). Moreover, they state that “the hypothesis tests that use these standard errors may be misleading” (p. 201). In line with their suggestion of testing for heteroscedasticity, this study uses the White test. The p-values of the White test for both models (1 and 2; see sections 6.2.4 and 6.2.5) are 0.7287 and 0.5432, respectively, which leads to retaining the null hypothesis that the variance of the residuals is homogeneous in both models. In other words, the models are free from heteroscedasticity.

This study examines for autocorrelation, as Hill et al. (2008) contend that the least squares estimator is inefficient and, therefore, hypothesis testing is no longer valid when autocorrelation exists in a model. Following their suggestion in testing for autocorrelation, this study uses the Durbin–Watson test. The statistical values of the Durbin–Watson test for both models (1 and 2; see sections 6.2.4 and 6.2.5) are 1.981 and
2.043, respectively, which leads to retaining the null hypothesis that the variance of the residuals is uncorrelated. This is in line with Hill et al. (2008), who contend that if the value of this test is close or equal to 2, it indicates that the errors are uncorrelated.

6.2.4 Model 1: Big 4 audit firms vs non-Big 4 audit firms (H1)

6.2.4.1 Multiple regression analysis

This research adopts OLS regression to test the role of Big 4 firms in mitigating discretionary accruals in Saudi Arabia. Table 9 shows that the overall model is statistically significant, as the F-value is 4.93 with a P-value of 0.00. The value of adjusted R-squared is 13%. The adjusted R-squared of this model is higher than the value of 8% reported by Becker et al. (1998). It is also higher than the value of 9% reported by Habbash and Alghamdi (2016). However, it is lower than the value of 18.3% reported by Boone et al. (2015). As shown in the table, the highest variance inflation factor (VIF) value is 3.141 for the control variable ROA. According to Gujarati (2004), the existence of multicollinearity between explanatory variables is low when the VIF is less than 10. This is a third confirmation that multicollinearity does not exist in this model. In the previous section, the Pearson’s correlation matrix table and auxiliary regressions also confirm that the explanatory variables are not strongly correlated.

Table 9 shows that the coefficient of the Big 4 auditors (BIGAUD) is not statistically significant at all the levels considered (1%, 5% and 10%). This implies acceptance of H1, which states that there are no differences in audit quality in firms audited by the Big 4 compared with firms audited by non-Big 4 auditors. The result is inconsistent with agency theory, stakeholder theory and legitimacy theory. Therefore, in Saudi Arabia, the external auditor is not one of the monitoring devices recognised by agency theory as mitigating conflicts between managers and shareholders and reducing agency costs. Furthermore, Big 4 auditors do not function as a tool to balance the different interests among
stakeholders, as Collier(2008) suggests. Legitimacy theory suggests the use of Big N auditors as a legitimation tool; however, the result in current study shows the reverse. The result is consistent with the result found by Habbash and Alghamdi (2016), who test the role of the Big 4 in mitigating earnings management in Saudi Arabia for the period 2006–2009. The result is also consistent with the finding of (Gomaa, 2013), who tests the role of the Big 4 in mitigating earnings management in 72 firms in Saudi Arabia in 2008–2012. Furthermore, the result is also consistent with the finding of Haniffa et al. (2006) for the main Malaysian market, Yasar (2013) in the Turkish context, Piot and Janin (2007) for the French stock market, Tsipouridou and Spathis (2012) in Greece, and Jeong and Rho (2004) for the Korean stock market.


In terms of the control variables, four variables are statistically significant: assets growth (ASGR), operating cash flow (CFL), return on assets (ROA) and leverage (LEVE). The rest of the control variables are statistically insignificant: negative income (NEG), seasoned equity offering (SEO), log of firm age (LAGE), complexity (COMLX) and log of total assets (LOGA).

The association between the absolute value of discretionary accruals and assets growth (ASGR) is statistically significant and positive at the 1% level, which indicates that firms with growth in total assets tend to engage in earnings management. This finding is consistent with Boone et al. (2015), who find growth has a positive relationship between absolute value of discretionary accruals and assets growth in the US.
and Michas (2013), Francis and Dechun (2008) and Gul et al. (2009) provide evidence of a positive association between growth and absolute discretionary accruals.

Table 9 Regression result of absolute discretionary accruals for Big 4 audit firms vs non-Big 4 audit firms (H1)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Unstandardised coefficients</th>
<th>Collinear statistics</th>
<th>Expected direction</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. error</td>
<td>t</td>
</tr>
<tr>
<td>(Constant)</td>
<td>0.090</td>
<td>0.023</td>
<td>3.960</td>
</tr>
<tr>
<td>BIGAUD</td>
<td>-0.006</td>
<td>0.004</td>
<td>-1.460</td>
</tr>
<tr>
<td>NEG</td>
<td>0.006</td>
<td>0.006</td>
<td>1.040</td>
</tr>
<tr>
<td>ASGR</td>
<td>0.040</td>
<td>0.014</td>
<td>2.850</td>
</tr>
<tr>
<td>CFL</td>
<td>-0.095</td>
<td>0.021</td>
<td>-4.580</td>
</tr>
<tr>
<td>ROA</td>
<td>0.049</td>
<td>0.029</td>
<td>1.690</td>
</tr>
<tr>
<td>SEO</td>
<td>0.000</td>
<td>0.015</td>
<td>0.010</td>
</tr>
<tr>
<td>LEVE</td>
<td>-0.029</td>
<td>0.017</td>
<td>-1.650</td>
</tr>
<tr>
<td>LAGE</td>
<td>-0.003</td>
<td>0.002</td>
<td>-1.380</td>
</tr>
<tr>
<td>COMLX</td>
<td>0.006</td>
<td>0.004</td>
<td>1.410</td>
</tr>
<tr>
<td>LOGA</td>
<td>-0.002</td>
<td>0.002</td>
<td>-1.040</td>
</tr>
</tbody>
</table>

Dummies: Years and industries

Dependent variable: ADISACC (absolute discretionary accruals)

Variables definitions are listed in table 6.

The ratio of operating cash flow (CFL) is negatively correlated with absolute discretionary accruals at the 1% level of significance. This result is consistent with numerous studies, such as Dechow (1994), Becker et al. (1998), Francis and Dechun (2008), Gul et al. (2009), Myers et al. (2003), Minutti-Meza (2013), Boone et al. (2015) and Habbash and Alghamdi (2016). The result indicates that firms with higher operating
cash flow engage less in earnings manipulation. In other words, high cash flow is an indicator of better performance (Frankel et al., 2002).

With respect to return on assets (ROA), the results show that absolute discretionary accruals are positively associated with return on assets. This reveals that firms with a high return on assets engage in earnings management. However, this result cannot indicate the exact relationship with income-increasing or income-decreasing activities, as discretionary accruals are unsigned, section 6.2.4.2 examines this issue in detail. The study’s finding inconsistent with (Habbash & Alghamdi, 2016).

The above result shows that leverage (LEVE) is negatively correlated with absolute discretionary accruals (at the 10% level of confidence). This indicates that, on average, firms with long-term debt engage less in earnings management. The sign of the relation in this study contrasts with that found in some studies, such as Klein (2002) and Chen et al. (2011). However, the sign of the relation is consistent with the finding of Francis and Dechun (2008). On the other hand, some studies find no relationship between leverage and discretionary accruals, such as Habbash and Alghamdi (2016), Boone et al. (2015) and Krishnan (2003a).

6.2.4.2 Additional analysis

6.2.4.2.1 Signed discretionary accruals

In the main analyses, the absolute value of discretionary accruals is used to measure earnings quality instead of discretionary accruals, which captures the joint effect of positive and negative earnings management decisions (Gul et al., 2009). Hribar and Craig Nichols (2007) argue that a joint effect may bias the test to reject the null hypothesis. Following this argument and previous studies that used the absolute value of discretionary accruals as a proxy for earnings management (e.g. Gul et al., 2009; Myers et al., 2003), the sample is divided into two sub-samples. The first sample contains firms with positive
discretionary accruals and the second comprises firms with negative discretionary accruals. This division is undertaken to examine if differences exist in the relationships between audit quality and discretionary accruals based on the sign of engagement in earnings management.

Table 10 shows the results of the multiple regression analyses for both positive and negative discretionary accruals. The results indicate that the models are statistically significant, as the P-value is 0.00 for both models. The adjusted R-squared of the positive discretionary accruals model is 41%, whereas the adjusted R-squared of the negative discretionary accruals is 24%. This indicates that these models are better at explaining the variation in discretionary accruals (dependent variable), as the adjusted R-squared of both models is higher than in the absolute discretionary accruals model.

Surprisingly, the coefficient for the Big 4 (BIGAUD) is not statistically significant in the positive model at any of the levels of significance considered (1%, 5% and 10%). This is statistical evidence that Big 4 firms are less effective at mitigating income-increasing activities in Saudi Arabia. Financial statements audited by Big 4 firms do not differ from those audited by non-Big 4 firms in terms of constraining income-increasing activities. This finding contradicts the notion that Big N auditors curb earnings management and that they are more conservative regarding positive earnings management. Studies such as Houq et al. (2017) and Chen et al. (2011) find the opposite. However, this result is consistent with the finding of Habbash and Alghamdi (2016). Moreover, this result is consistent with that obtained by Idris (2012), who provides evidence that Big 5 firms do not curb positive earnings management in the manufacturing sector in the capital market in Jordan. Moreover, this result is in line with that reported by Myers et al. (2003), who find that Big N auditors mitigate discretionary accruals in the main analysis, whereas this finding does not hold when dividing the sample based on the sign of the discretionary accruals. They find that the Big N coefficient is not statistically significant with positive
discretionary accruals, whereas Big N is statistically significant with negative discretionary accruals, which indicates that the main finding is driven by the role of Big N auditors in curbing negative discretionary accruals. In addition, Ashbaugh, LaFond, and Mayhew (2003) find that the coefficient of the Big 5 variable in their positive discretionary accruals result is not statistically significant, which is consistent with the result of this study.

Table 10 Regression result of signed discretionary accruals for Big 4 audit firms vs non-Big 4 audit firms (H1)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Positive discretionary accruals</th>
<th>Negative discretionary accruals *(−1)27</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>t</td>
</tr>
<tr>
<td>(Constant)</td>
<td>0.028</td>
<td>0.820</td>
</tr>
<tr>
<td>BIGAUD</td>
<td>-0.002</td>
<td>-0.410</td>
</tr>
<tr>
<td>NEG</td>
<td>-0.014</td>
<td>-1.700</td>
</tr>
<tr>
<td>ASGR</td>
<td>0.016</td>
<td>0.830</td>
</tr>
<tr>
<td>CFL</td>
<td>-0.336</td>
<td>-11.760</td>
</tr>
<tr>
<td>ROA</td>
<td>0.194</td>
<td>5.330</td>
</tr>
<tr>
<td>SEO</td>
<td>0.015</td>
<td>0.820</td>
</tr>
<tr>
<td>LEVE</td>
<td>-0.014</td>
<td>-0.660</td>
</tr>
<tr>
<td>LAGE</td>
<td>0.001</td>
<td>0.450</td>
</tr>
<tr>
<td>COMLX</td>
<td>-0.003</td>
<td>-0.580</td>
</tr>
<tr>
<td>LOGA</td>
<td>0.003</td>
<td>1.070</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dummies</th>
<th>Years and industries</th>
<th>Years and industries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjusted R-squared</td>
<td>0.41</td>
<td>0.24</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.46</td>
<td>0.29</td>
</tr>
<tr>
<td>F-value</td>
<td>9.57</td>
<td>5.12</td>
</tr>
<tr>
<td>F-sig.</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Observation</td>
<td>282</td>
<td>309</td>
</tr>
</tbody>
</table>

Dependent variable: DISACC (discretionary accruals).
Variables definitions are listed in table 6.

27 Negative discretionary accruals are multiplied by *(−1)* to make the results easier to understand.
In terms of the Big 4 coefficient (BIGAUD) in the negative model, it is statistically significant at the 5% level. This indicates that Big 4 auditors are more effective at mitigating income-decreasing than income-increasing activities. This result shows that the BIGAUD coefficient in the absolute discretionary accruals model is driven by positive discretionary accruals, which are not statistically significant in the positive discretionary accruals model. This result is in line with that reported by Myers et al. (2003), who find Big N auditors constrain negative discretionary accruals for both long-term and current discretionary accruals. This result is also consistent with that obtained by Idris (2012), who provides evidence that Big 5 firms curb negative earnings management in the manufacturing sector in the capital market in Jordan. However, this result is inconsistent with that obtained by Habbash and Alghamdi (2016), who find no role for the Big 4 in Saudi Arabia in curbing both positive and negative discretionary accruals. Moreover, Chen et al. (2011) provide evidence from the Chinese market that Big 8 firms are less effective at mitigating negative discretionary accruals. This finding is also inconsistent with the result reported by Ashbaugh et al. (2003).

With regard to the control variables, the NEG coefficient is associated negatively with positive discretionary accruals. This indicates that firms that reported a loss engage less in earnings management. This result is consistent with that obtained by Francis and Yu (2009). Nevertheless, Chen et al. (2011) provide evidence that is contradictory to the finding of this result. However, the NEG coefficient is not statistically significant in the negative discretionary accruals model. The coefficient of cash flow from operating activities (CFL) and return on assets (ROA) is statistically significant in both models.

6.2.4.2.2 Alternative proxy for earnings management

Teoh et al. (1998b) argue that managers have more flexibility in managing current accruals than long-term accruals. The ease of discretion in current accruals is related to daily firm operations. For instance, managers have discretion over how much and when
to write off bad loans. Dechow (1994) also contends that the manipulation of total accruals comes from the current accruals component. Therefore, this study applies the current accruals version of the model by Kothari et al. (2005) to examine whether Big 4 auditors in Saudi Arabia mitigate current accruals manipulation, which is consistent with researchers such as Ashbaugh et al. (2003), Myers et al. (2003), Kim, Chung, and Firth (2003), Athanasakou et al. (2009) and Cameran et al. (2015).

Table 11 shows the results obtained from applying the current accruals version of the Kothari et al. (2005) model to test the role of Big 4 firms in mitigating current discretionary accruals in Saudi Arabia. As can be seen from the table, Big 4 auditors are less effective at constraining current discretionary accruals. The coefficients of Big 4 auditors (BIGAUD) are not significant at any of the levels of significance (1%, 5% and 10%) considered for all models: absolute current discretionary accruals, positive current discretionary accruals and negative current discretionary accruals. Therefore, in Saudi Arabia, the external auditor is not one of the monitoring devices recognised by agency theory as mitigating conflicts between managers and shareholders and reducing agency costs. The result obtained by Haniffa et al. (2006) is consistent with the finding of this study in this regard. The result of this study contradicts the finding of Myers et al. (2003), however, who document that Big N auditors curb current discretionary accruals for both positive and negative discretionary accruals.
Table 11 Regression results of the signed discretionary accruals alternative proxy for earnings management (H1)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Absolute current discretionary accruals</th>
<th>Positive current discretionary accruals</th>
<th>Negative current discretionary accruals <em>(−1)</em>[^28]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>t</td>
<td>Sig.</td>
</tr>
<tr>
<td>(Constant)</td>
<td>0.062</td>
<td>1.740</td>
<td>0.082</td>
</tr>
<tr>
<td>BIGAUD</td>
<td>-0.003</td>
<td>-0.390</td>
<td>0.693</td>
</tr>
<tr>
<td>NEG</td>
<td>0.013</td>
<td>1.410</td>
<td>0.159</td>
</tr>
<tr>
<td>ASGR</td>
<td>0.070</td>
<td>3.210</td>
<td>0.001</td>
</tr>
<tr>
<td>CFL</td>
<td>-0.003</td>
<td>-0.100</td>
<td>0.923</td>
</tr>
<tr>
<td>ROA</td>
<td>0.003</td>
<td>0.060</td>
<td>0.954</td>
</tr>
<tr>
<td>SEO</td>
<td>0.021</td>
<td>0.880</td>
<td>0.379</td>
</tr>
<tr>
<td>LEVE</td>
<td>-0.056</td>
<td>-2.090</td>
<td>0.037</td>
</tr>
<tr>
<td>LAGE</td>
<td>-0.007</td>
<td>-2.050</td>
<td>0.041</td>
</tr>
<tr>
<td>COMLX</td>
<td>-0.003</td>
<td>-0.480</td>
<td>0.633</td>
</tr>
<tr>
<td>LOGA</td>
<td>-0.002</td>
<td>-0.580</td>
<td>0.564</td>
</tr>
<tr>
<td>Dummies</td>
<td>Years and industries</td>
<td>Years and industries</td>
<td>Years and industries</td>
</tr>
<tr>
<td>Adjusted R-squared</td>
<td>0.10</td>
<td>0.11</td>
<td>0.13</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.14</td>
<td>0.17</td>
<td>0.20</td>
</tr>
<tr>
<td>F-value</td>
<td>3.91</td>
<td>2.53</td>
<td>2.87</td>
</tr>
<tr>
<td>F-sig.</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Observation</td>
<td>591</td>
<td>300</td>
<td>291</td>
</tr>
</tbody>
</table>

Variables definitions are listed in table 6.

[^28]: Negative discretionary accruals are multiplied by (−1) to make the results easier to understand.
6.2.4.2.3 Non-parametric test

As mentioned in section 6.2.3, the normality assumption has not been met in this study. Therefore, the Wilcoxon rank sum (Mann-Whitney) test is used to verify the robustness of the OLS results. Doane and Seward (2018) state that the Wilcoxon test “does not require normality but does assume symmetric populations. It corresponds to the parametric t test for one mean” (p. 693). The test is used in this study to examine differences in the medians of absolute discretionary accruals between Big 4 and non-Big 4 firms. Table 12 shows that the p-value of the Wilcoxon rank sum test is 0.2895, which suggests that there is an insignificant difference in the absolute discretionary accruals between Big 4 and non-Big 4 firms and, therefore, leads to the acceptance of H1. Furthermore, the result of this test confirms the OLS result in section 6.2.4.1.

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Statistic Value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Big 4 audit firms vs non-Big 4 audit firms (H1)</td>
<td>1.0592</td>
<td>0.2895</td>
</tr>
</tbody>
</table>

6.2.5 Model 2: Deloitte audit firm vs the other Big 3 audit firms (H2)

6.2.5.1 Multiple regression analysis

Table 13 shows the output of the OLS regression used to test the audit quality of Deloitte compared with the rest of the Big 4 in Saudi Arabia. In this model, the sample is restricted to the Big 4 auditors, following studies such as Boone et al. (2015), Cahan and Zhang (2006), Gul et al. (2009) and Johnson et al. (2002). Excluding non-Big 4 firms from the sample allows examination of characteristics of the auditors that differ within firms of the same size (Johnson et al., 2002). In addition, excluding non-Big 4 firms allows examination of accruals differences that “reflect auditor conservatism rather than quality differences between Big 4 firms and non-Big 4 firms” (Cahan & Zhang, 2006, p. 58).
Craswell et al. (1995) show that Big 6 firms assign more resources to training their staff and developing their expertise. Because of the size of the Big 6 firms, Krishnan (2003b) believes that they are able to induce their clients to adopt better accounting practices.

Table 13 shows that the overall model is statistically significant, as the F-value is 3.82 and the P-value is 0.00. The value of adjusted R-squared is 16%. The adjusted R-squared of this model is higher than the value of 13.5% reported by Gul et al. (2009). It is also higher than the value of 8.3% reported by (Cahan & Zhang, 2006). However, it is lower than the value of 18.3% reported by Boone et al. (2015). As shown in the table, the highest VIF value is 3.514 for the control variable ROA. According to Gujarati (2004), the existence of multicollinearity between explanatory variables is low when the VIF is less than 10. This is a third confirmation that multicollinearity does not exist in this model. In the previous section, the Pearson’s correlation matrix table and auxiliary regressions also confirm that explanatory variables are not strongly correlated.

Table 13 shows that the coefficient of Deloitte is not statistically significant at any of the levels considered (1%, 5% and 10%). This provides statistical evidence that there are no differences in audit quality between Deloitte and the other Big 4 firms. This implies rejection of H2, which states that there are differences in audit quality between Deloitte and the other Big 3 audit firms. The result is consistent with Boone et al. (2015), who investigate the disciplinary order against Deloitte by the Company Accounting Oversight Board (PCAOB) in the US.

In terms of the control variables, three are statistically significant: assets growth (ASGR), operating cash flow (CFL), and return on assets (ROA). The association between the absolute value of discretionary accruals and assets growth (ASGR) is statistically significant and positive at the 1% level, which indicates that firms with growth in total assets tend to engage in earnings management. This finding is consistent with Boone et al. (2015), who find growth has a positive relationship between absolute value of
discretionary accruals and assets growth in the US. Moreover, Francis and Michas (2013), Francis and Dechun (2008) and Gul et al. (2009) provide evidence of a positive association between assets growth and absolute discretionary accruals. Moreover, this result is consistent with model 1, which indicates that growth firms in Saudi Arabia engage in earnings management regardless of the size of the external auditor (Big 4 or non-Big 4).

Table 1.3 Regression results for the absolute discretionary accruals for Deloitte audit firm vs the other Big 3 audit firms (H2)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Unstandardised coefficients</th>
<th>Collinearity statistics</th>
<th>Expected direction</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. error</td>
<td>t</td>
</tr>
<tr>
<td>(Constant)</td>
<td>0.052</td>
<td>0.030</td>
<td>1.770</td>
</tr>
<tr>
<td>Deloitte</td>
<td>-0.002</td>
<td>0.005</td>
<td>-0.440</td>
</tr>
<tr>
<td>NEG</td>
<td>0.005</td>
<td>0.007</td>
<td>0.660</td>
</tr>
<tr>
<td>ASGR</td>
<td>0.054</td>
<td>0.016</td>
<td>3.480</td>
</tr>
<tr>
<td>CFL</td>
<td>-0.108</td>
<td>0.027</td>
<td>-4.020</td>
</tr>
<tr>
<td>ROA</td>
<td>0.073</td>
<td>0.034</td>
<td>2.130</td>
</tr>
<tr>
<td>SEO</td>
<td>-0.005</td>
<td>0.016</td>
<td>-0.340</td>
</tr>
<tr>
<td>LEVE</td>
<td>-0.024</td>
<td>0.017</td>
<td>-1.380</td>
</tr>
<tr>
<td>LAGE</td>
<td>-0.002</td>
<td>0.002</td>
<td>-0.990</td>
</tr>
<tr>
<td>COMLX</td>
<td>0.002</td>
<td>0.004</td>
<td>0.470</td>
</tr>
<tr>
<td>LOGA</td>
<td>-0.002</td>
<td>0.002</td>
<td>-1.080</td>
</tr>
<tr>
<td>Dummies</td>
<td>Years and industries</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted R-squared</td>
<td>0.16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R-squared</td>
<td>0.22</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F-value</td>
<td>3.82</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F-sig.</td>
<td>0.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Observation</td>
<td>339</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Dependent variable: ADISACC (absolute discretionary accruals). Variables definitions are listed in table 6.

Operating cash flow (CFL) is negatively correlated with absolute discretionary accruals at the 1% level of significance, which is consistent with the result of model 1. This result
is consistent with numerous studies, such as (Dechow, 1994), Becker et al. (1998), Francis and Dechun (2008), Gul et al. (2009), Myers et al. (2003), Minutti-Meza (2013), Boone et al. (2015) and Habbash and Alghamdi (2016). The result indicates that firms with higher operating cash flow engage less in earnings manipulation. In other words, high cash flow is an indicator of better performance (Frankel et al., 2002). On the other hand, a few studies find that operating cash flow (CFL) is not statistically significant with absolute discretionary accruals. For instance, Chen et al. (2011) find that this kind of association does not exist in the Chinese market. In addition, Haniffa et al. (2006) provide evidence of the same result as Chen et al. (2011) in the Malaysian market.

This result shows that return on assets (ROA) is negatively correlated with absolute discretionary accruals (at the 5% level of confidence). This indicates that, on average, firms with a low ROA engage less in earnings management. This result is consistent with Cohen and Zarowin (2010). However, this finding is consistent with (Habbash & Alghamdi, 2016).

6.2.5.2 Additional analysis

6.2.5.2.1 Signed discretionary accruals

Table 14 presents the results of the multiple regression analyses for both positive and negative discretionary accruals, which indicate that the models are statistically significant as the P-value is 0.00 for both models. The adjusted R-squared of the positive discretionary accruals model is 52%, whereas the adjusted R-squared of the negative discretionary accruals is 26%. This indicates that positive models are more effective at explaining the variation in discretionary accruals (dependent variable), as the adjusted R-squared of the model is higher than for the absolute discretionary accruals model.

The coefficient of Deloitte is not statistically significant in either model at all levels of significance (1%, 5% and 10%). This is statistical evidence that audit quality does not
differ between Deloitte and the other Big 4 firms in relation to income-increasing or income-decreasing activities. The result is consistent with Boone et al. (2015), who investigate the disciplinary order against Deloitte by the PCAOB in the US. However, this result is inconsistent with the finding of Krishnan and Visvanathan (2008), who provide evidence that firms audited by Arthur Andersen engaged in earnings management compared with other Big 5 auditors.

With regard to the control variables, the coefficient of assets growth (ASGR) is associated negatively with negative discretionary accruals. This indicates that growth firms engage in negative earnings management, which is inconsistent with the argument of Matsumoto (2002) that managers in growth firms engage in accruals income-increasing activities to evade unexpected income loss. The coefficient of the ratio of operating cash flow (CFL) and return on assets is statistically significant in both models, as it is found in the Big 4 vs non-Big 4 model.
Table 14 Regression result for the signed discretionary accruals for Deloitte audit firm vs the other Big 3 audit firms (H2)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Positive discretionary accruals</th>
<th>Negative discretionary accruals *(−1)²⁹</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>B</strong></td>
<td><strong>t</strong></td>
</tr>
<tr>
<td>(Constant)</td>
<td>0.027</td>
<td>0.610</td>
</tr>
<tr>
<td>Deloitte</td>
<td>0.001</td>
<td>0.230</td>
</tr>
<tr>
<td>NEG</td>
<td>-0.010</td>
<td>-1.060</td>
</tr>
<tr>
<td>ASGR</td>
<td>0.010</td>
<td>0.500</td>
</tr>
<tr>
<td>CFL</td>
<td>-0.420</td>
<td>-10.670</td>
</tr>
<tr>
<td>ROA</td>
<td>0.278</td>
<td>6.680</td>
</tr>
<tr>
<td>SEO</td>
<td>0.013</td>
<td>0.690</td>
</tr>
<tr>
<td>LEVE</td>
<td>-0.002</td>
<td>-0.090</td>
</tr>
<tr>
<td>LAGE</td>
<td>0.004</td>
<td>1.410</td>
</tr>
<tr>
<td>COMMLX</td>
<td>-0.009</td>
<td>-1.650</td>
</tr>
<tr>
<td>LOGA</td>
<td>0.001</td>
<td>0.430</td>
</tr>
<tr>
<td>Dummies</td>
<td>Years and industries</td>
<td>Years and industries</td>
</tr>
<tr>
<td>Adjusted R-squared</td>
<td>0.52</td>
<td>0.26</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.59</td>
<td>0.36</td>
</tr>
<tr>
<td>F-value</td>
<td>8.36</td>
<td>3.76</td>
</tr>
<tr>
<td>F-sig.</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Observation</td>
<td>160</td>
<td>179</td>
</tr>
</tbody>
</table>

Dependent variable: DISACC (discretionary accruals). Variables definitions are listed in table 6.

6.2.5.2.2 Alternative discretionary accrual measures

Table 15 shows the results obtained from applying the current accruals version of the Kothari et al. (2005) model to examine if there is any difference between Deloitte and the other Big 4 firms in Saudi Arabia. The table shows the coefficients of Deloitte are not significant at any of the levels of significance (1%, 5% and 10%) for all the models: absolute current discretionary accruals, positive current discretionary accruals, and

²⁹ Negative discretionary accruals are multiplied by (-1) to make the results easier to understand.
negative current discretionary accruals. This finding is consistent with previous models, which indicates that the Deloitte office does not differ from the rest of the Big 4 in terms of the level of discretionary accruals (long-term).
Table 15 Regression results of the signed discretionary accruals alternative proxy for earnings management (H2)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Absolute current discretionary accruals</th>
<th>Positive current discretionary accruals</th>
<th>Negative current discretionary accruals *(-1)30</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>t</td>
<td>Sig.</td>
</tr>
<tr>
<td>(Constant)</td>
<td>0.051</td>
<td>1.240</td>
<td>0.215</td>
</tr>
<tr>
<td>Deloitte</td>
<td>0.010</td>
<td>1.370</td>
<td>0.173</td>
</tr>
<tr>
<td>NEG</td>
<td>0.024</td>
<td>2.040</td>
<td>0.043</td>
</tr>
<tr>
<td>ASGR</td>
<td>0.078</td>
<td>3.110</td>
<td>0.002</td>
</tr>
<tr>
<td>CFL</td>
<td>0.034</td>
<td>0.780</td>
<td>0.436</td>
</tr>
<tr>
<td>ROA</td>
<td>0.008</td>
<td>0.150</td>
<td>0.883</td>
</tr>
<tr>
<td>SEO</td>
<td>0.006</td>
<td>0.220</td>
<td>0.827</td>
</tr>
<tr>
<td>LEVE</td>
<td>-0.026</td>
<td>-0.940</td>
<td>0.349</td>
</tr>
<tr>
<td>LAGE</td>
<td>-0.006</td>
<td>-1.500</td>
<td>0.134</td>
</tr>
<tr>
<td>COMlx</td>
<td>-0.005</td>
<td>-0.730</td>
<td>0.465</td>
</tr>
<tr>
<td>LOGA</td>
<td>-0.001</td>
<td>-0.320</td>
<td>0.751</td>
</tr>
</tbody>
</table>

Dummies: | Years and industries | Years and industries | Years and industries |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjusted R-squared</td>
<td>0.19</td>
<td>0.11</td>
<td>0.28</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.25</td>
<td>0.23</td>
<td>0.38</td>
</tr>
<tr>
<td>F-value</td>
<td>4.68</td>
<td>1.97</td>
<td>4.1</td>
</tr>
<tr>
<td>F-sig.</td>
<td>0.00</td>
<td>0.01</td>
<td>0.00</td>
</tr>
<tr>
<td>Observation</td>
<td>339</td>
<td>168</td>
<td>171</td>
</tr>
</tbody>
</table>

Variables definitions are listed in table 6.

30 Negative discretionary accruals are multiplied by (-1) to make the results easier to understand.
6.2.4.2.3 Non-parametric test

As section 6.2.3 states, the normality assumption has not been met in this study, so the Wilcoxon rank sum (Mann-Whitney) test is used to verify the robustness of the OLS results. The test is used to examine differences in the medians of absolute discretionary accruals between Deloitte and the other Big 3 audit firms. Table 16 shows that the p-value of the Wilcoxon rank sum test is 0.9699, which implies rejection of H2. Furthermore, the result of this test confirms the OLS result in section 6.2.5.1.

Table 16 Result of Wilcoxon rank sum test for (H2)

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Statistic Value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deloitte audit firm vs the other Big 3 audit firms (H2)</td>
<td>-0.0378</td>
<td>0.9699</td>
</tr>
</tbody>
</table>

6.2.6 Discussion

This study was conducted in response to the ban placed on Deloitte by the CMA in Saudi Arabia and re-examines the impact of the Big 4 on earnings management. Unlike previous studies that examine audit quality in Saudi Arabia, the sample of this study covers the entire period in which data became available, from 2004 to 2014. As mentioned in chapter 3 section 3.6, these studies have some weaknesses in their methodology. This study, therefore, adopts a different methodology by controlling for SEO and excluding the lock-up period when estimating discretionary accruals. Moreover, this study examines whether the audit quality of Deloitte differs from that of the rest of the Big 4. This study uses long-term and current discretionary accruals as a proxy for earnings management.

The finding of the above regressions analysis contrasts with the notion that Big 4 firms act as a deterrent to income-increasing activities. Moreover, the finding of this study is inconsistent with the argument of agency theory, which considers Big N as one of the
monitoring devices that mitigate the engagement of earnings management. Stakeholder theory suggests that Big 4 auditors do not function as a tool to balance the different interests among stakeholders whereas the result of this study shows the opposite. Also, legitimacy theory suggests the use of Big N auditors as a legitimation tool; however, the result in current study shows the reverse. This result may be explained by Alghamdi and Alangari (2005), who find that the professional environment is not of a high quality and report violations in implementing quality review programmes in audit firms, which indicates that the oversight mechanism of SOCPA is less effective in accounting firms.

As the oversight mechanism is weak, auditors might not mitigate engagement in earnings management and, therefore, economic motivations may encourage auditors to retain existing clients, especially when the client is a large firm.

Saudi Arabia has a less well-developed capital market Habbash and Alghamdi (2016) and has weak enforcement mechanisms, as the CMA was only recently established (2003) and all the rules and regulations that govern the market have been issued by the CMA. Moreover, the ban placed on Deloitte is the first by the CMA. Given these factors, the risk of litigation is less in the legal environment of Saudi Arabia, which may explain the less effective monitoring role of the Big 4.

The above finding may be explained by Francis (2004, p. 352), who provides a counterargument for the notion that the Big 4 are concerned about their reputation as they provide a higher quality service, by stating that this does “not necessitate that Big 8 (now Big 4) audits are always superior. Individual audit failures by Big 4 firms can and do occur”. He also provides a counterargument for the notion that the Big 4 provide higher audit quality as they are sued less compared with non-Big 4 firms. Francis (2004, p. 353) claims that Big 4 firms have resources that make them able “to fight lawsuits and regulators”.

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This study finds that Big 4 auditors are more effective at mitigating the activities of income-decreasing than income-increasing. This finding can be interpreted by the result of DeFond and Jiambalvo (1994), who argue that firms in financial crisis engage in income-decreasing to benefit from debt agreement renegotiations. Big 4 (BIGAUD) variable is significantly correlated with the leverage (LEVE) variable in a positive way at a value of 33%. Therefore, firms hire one of the Big 4 auditors to add more credibility to their financial statements, as lenders will then be more satisfied with the accuracy of the statements. Thus, Big 4 auditors are more concerned, in this case, with their reputation. Another possible explanation is that lenders force firms to hire one of the Big 4 auditors to satisfy themselves with regard to the accuracy of the statements that are used in order to take the decision of lending money to the firm.

As the Big 4 do not curb positive earnings manipulation and the audit quality of Deloitte does not vary from the rest of the Big 4, this could be an explanation of the banning of Deloitte because of the collapse of the Al-Mojil Group, as there is evidence that Deloitte did not prevent its clients from engaging in income-increasing activities, therefore, Deloitte may be accountable for the collapse of the Al-Mojil Group. Alternatively, Deloitte was examined by the CMA, whereas the others were not, and the CMA found that Deloitte violated auditing standards, which may also have been the case with the rest of the Big 4, as they do not mitigate engagement in upwards earnings management. Moreover, as this ban on Deloitte was the first imposed by the CMA since it was established, the CMA may have applied the highest penalties possible to send a strong signal to the market that it will not allow any violation of the regulations that govern listed firms, including auditing standards. Furthermore, the current research adopts the argument of Boone et al. (2015), who investigate the disciplinary order brought against Deloitte by the Public Company Accounting Oversight Board (PCAOB) in the US. As they find that Deloitte did not differ from the rest of the Big 4 in terms of mitigating
earnings management, they argue that PCAOB oversight “was focused on documentation and substantiation compliance rather than on a holistic assessment of Big 4 audit outcomes” (p. 436). The researcher of this study argues that the same might have been the case in the ban placed on Deloitte in Saudi Arabia, particularly in light of the recent establishment of the CMA (2003) and its lack of experience, as this was the first ban by the organisation.

6.3 Empirical 2: Earnings Management and IPOs

6.3.1 Descriptive statistics

Table 17 presents a summary of the descriptive statistics for all the variables (dependent, independent and control) used to examine earnings management and audit quality for the IPO sample in Saudi Arabia, in which current discretionary accruals (CURRACC) is the dependent variable and dummy variable for listing year (IPO_Y0), dummy variable for the year before the listing year (IPO_B), dummy variable for firms audited by the Big 4 before listing (IPO_Big4) and dummy variable for firms audited by Deloitte before listing (IPO_DELO) are the independent variables used in the different models.

As shown in Table 17, the mean value of the dependent variable CURRACC is 0.0022, with a standard deviation of 0.1439. The table also shows the existence of a large variation in current discretionary accruals in the study sample, with a minimum of -0.4581 and a maximum of 0.4424. The mean value of IPO_Big4 is 0.4048, which indicates that approximately 40% of the pre-IPO financial statements were audited by one of the Big 4. The mean value of IPO_Big4 in this sample is lower than the value of 57.36% reported in the Empirical 1 sample. The mean value of IPO_DELO is 0.2083, which indicates that 20.83% of the pre-IPO financial statements were audited by Deloitte. The mean value of

31 To minimise the influence of outliers, all continuous variables are Winsorised at the top 1% and bottom 99%. This treatment of outliers follows other earnings management literature (e.g. Alhadab et al., 2016; Zalata & Roberts, 2017).
IPO_DELO in this sample is higher than the value of 16.75% reported in the sample in Empirical 1. IPO_Y0 is a dummy variable that takes ‘1’ for a listing year and ‘0’ otherwise. IPO_B is a dummy variable that takes ‘1’ for a pre-listing year and ‘0’ otherwise. The mean of these variables is 25%, as the sample covers four years.

Assets growth has a mean of 0.2274, with a minimum of -0.3205 and a maximum of 1.2327. The mean of this sample is higher than the mean of the non-IPO sample, which is to be expected as some firms raise capital during an IPO. An IPO firm has 123.27% growth in assets, whereas the highest growth is 74.24% in the non-IPO sample, which is clearly due to capital raising during an IPO.

Table 17 Descriptive statistics for the IPO sample

<table>
<thead>
<tr>
<th>N</th>
<th>Mean</th>
<th>Std. deviation</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURRACC</td>
<td>168</td>
<td>0.0022</td>
<td>0.1439</td>
<td>-0.4581</td>
</tr>
<tr>
<td>IPO_B</td>
<td>168</td>
<td>0.2500</td>
<td>0.4343</td>
<td>0.0000</td>
</tr>
<tr>
<td>IPO_Y0</td>
<td>168</td>
<td>0.2500</td>
<td>0.4343</td>
<td>0.0000</td>
</tr>
<tr>
<td>IPO_Big4</td>
<td>168</td>
<td>0.4048</td>
<td>0.4923</td>
<td>0.0000</td>
</tr>
<tr>
<td>IPO_DELO</td>
<td>168</td>
<td>0.2083</td>
<td>0.40733</td>
<td>0.0000</td>
</tr>
<tr>
<td>Proceed</td>
<td>168</td>
<td>0.0230</td>
<td>0.0995</td>
<td>0.0000</td>
</tr>
<tr>
<td>ASGR</td>
<td>168</td>
<td>0.2274</td>
<td>0.2687</td>
<td>-0.3205</td>
</tr>
<tr>
<td>NEG</td>
<td>168</td>
<td>0.0060</td>
<td>0.0772</td>
<td>0.0000</td>
</tr>
<tr>
<td>LOGA</td>
<td>168</td>
<td>13.9112</td>
<td>0.8182</td>
<td>11.9694</td>
</tr>
<tr>
<td>CFL</td>
<td>168</td>
<td>0.1612</td>
<td>0.1194</td>
<td>-0.1072</td>
</tr>
<tr>
<td>ROA</td>
<td>168</td>
<td>0.1424</td>
<td>0.0766</td>
<td>-0.0416</td>
</tr>
<tr>
<td>LEVE</td>
<td>168</td>
<td>0.0784</td>
<td>0.1108</td>
<td>0.0000</td>
</tr>
<tr>
<td>Complexity</td>
<td>168</td>
<td>0.5714</td>
<td>0.4964</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

CURRACC: Current discretionary accruals; IPO_Y0: dummy variable for listing year; IPO_B: dummy variable for the year before the listing year; IPO_Big4: dummy variable for firms audited by the Big 4 before listing; IPO_DELO: dummy variable for firms audited by Deloitte before listing; Proceed: IPO proceeds divided by average assets; ASGR: assets growth; NEG: dummy variable for negative income; LOGA: log of total assets; CFL: operating cash flow; ROA: return on assets; LEVE: leverage; LAGE: firm’s age; COMLX: complexity.
The mean value of \(\text{NEG}\) is 0.006, with a minimum of zero and a maximum of 1, as it is a dummy variable. The size of the firm (log of total assets) has a mean of 13.91, whereas the mean of the non-IPO sample has a value of 14.19, which indicates that the size of the firms trading in the market is higher than for newly listed firms. The maximum value of firm size is 17.19, whereas the maximum of the non-IPO sample is 19.42, which is another indicator that trading firms are larger in size. The ratio of operating cash flow (\(\text{CFL}\)), scaled by average total assets, has a mean of 0.1612, with a minimum of -0.1072 and a maximum of 0.4313. In the non-IPO sample, the mean of \(\text{CFL}\) is 0.1067, with a minimum of -0.1941 and a maximum of 0.4141.

Return on assets (\(\text{ROA}\)) has a mean value of 0.1424, with a minimum value of -0.0416 and a maximum value of 0.4118. The mean value of \(\text{ROA}\) is close to the value of 0.0839 obtained from the non-IPO sample, which indicates that \(\text{ROA}\) for both newly listed and listed firms is almost the same in the market.

In terms of leverage (\(\text{LEVE}\)), this has a mean value of 0.0784, with a minimum of zero and a maximum of 0.4747. This indicates that, on average, 7.84\% of total assets are funded from long-term debt in the IPO sample, whereas 10.11\% of total assets are funded from long-term debt in the non-IPO sample. This indicates that IPO firms rely less on long-term debt to obtain assets.

The mean value of \(\text{COMLX}\) is 0.5714, which indicates that 57.14\% of firms in the IPO sample have at least one subsidiary firm. \(\text{COMLX}\) has a minimum value of zero and a maximum value of 1, as it is a dummy variable.

**6.3.2 Correlation matrix**

As mentioned previously, it is important to test the correlation matrix among the variables to detect the existence of a collinearity problem. Table 18 shows the Pearson’s correlation matrix among all the dependent and independent variables. As can be seen from the table,
the highest correlation coefficient is 0.60 and is far from 0.8, which indicates no multicollinearity exists among the variables in the model.

The result indicates that a significant positive correlation exists between the dependent variable (CURRACC) and some of the independent variables, namely, year of listing (IPO_Y0) and cash proceeds during an IPO event (Proceed), but, by contrast, there is a significant negative correlation between the dependent negative income (NEG) and operating cash flow (CFL).

The results show that a significant positive correlation exists between IPO_Y0 and the Proceed variable. This is because of cash proceeds that occur during an IPO year. A significant positive association also exists between IPO_Y0 and assets growth (ASGR), which is to be expected as some IPO firms raise capital during an IPO.

The IPO_Big4 variable has a significant negative relationship with Proceed and LOGA at 19% and 20%, respectively. This indicates that some of the IPO firms that raised capital during an IPO selected non-Big 4 firms to audit their pre-IPO financial statements, which suggests that some IPO firms that are smaller in size preferred non-Big 4 firms to audit their pre-IPO financial statements. It is worth highlighting that there is a significant positive correlation between proceeds and assets growth, at 42%, as it was expected that this correlation must be positive because of the cash proceeds during an IPO year. As shown in the table, there is a significant positive correlation between leverage (LEVE) and size (LOGA) at 33% (1% significance level). However, this correlation is far less than was found in the audit quality sample (59%), which confirms that IPO firms rely on cash proceeds from raising capital during an IPO rather than long-term debt.
Table 18 Pearson’s correlation matrix for the IPO sample

<table>
<thead>
<tr>
<th></th>
<th>CURRACC</th>
<th>IPO_Y0</th>
<th>IPO_Y-1</th>
<th>IPO_Big4</th>
<th>Proceed</th>
<th>ASGR</th>
<th>NEG</th>
<th>LOGA</th>
<th>CFL</th>
<th>ROA</th>
<th>LEVE</th>
<th>Complexity</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURRACC</td>
<td>1</td>
<td>0.19*</td>
<td>-0.10</td>
<td>-0.03</td>
<td>0.32**</td>
<td>0.13</td>
<td>-0.20**</td>
<td>0.10</td>
<td>-0.27*</td>
<td>-0.07</td>
<td>0.04</td>
<td>0.03</td>
</tr>
<tr>
<td>IPO_Y0</td>
<td>1</td>
<td>0.33**</td>
<td>-0.48**</td>
<td>0.40**</td>
<td>0.20**</td>
<td>-0.04</td>
<td>0.10</td>
<td>0.05</td>
<td>-0.02</td>
<td>0.00</td>
<td>0.06</td>
<td></td>
</tr>
<tr>
<td>IPO_B</td>
<td>1</td>
<td></td>
<td>-0.48**</td>
<td>-0.13</td>
<td>-0.15</td>
<td>-0.04</td>
<td>0.20**</td>
<td>-0.10</td>
<td>0.11</td>
<td>0.06</td>
<td>0.03</td>
<td></td>
</tr>
<tr>
<td>IPO_Big4</td>
<td></td>
<td>1</td>
<td>-0.19**</td>
<td>0.01</td>
<td>0.09</td>
<td>-0.20**</td>
<td>-0.02</td>
<td>0.14</td>
<td>-0.05</td>
<td>-0.05</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proceed</td>
<td></td>
<td>1</td>
<td></td>
<td>0.42**</td>
<td>-0.02</td>
<td>0.23**</td>
<td>0.04</td>
<td>-0.15</td>
<td>-0.02</td>
<td>-0.10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ASGR</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td>-0.07</td>
<td>0.20**</td>
<td>0.06</td>
<td>0.00</td>
<td>0.07</td>
<td>-0.11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NEG</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td>0.16*</td>
<td>-0.17*</td>
<td>-0.18*</td>
<td>-0.05</td>
<td>0.07</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOGA</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td>-0.13</td>
<td>-0.31**</td>
<td>0.33**</td>
<td>0.20**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CFL</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>0.60**</td>
<td>-0.14</td>
<td>-0.15*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ROA</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>-0.36**</td>
<td>-0.20</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LEVE</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>0.04</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complexity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>

** Correlation is significant at the 0.01 level.

* Correlation is significant at the 0.05 level.

Variables definitions are listed in table 17.
6.3.3 Normality, multicollinearity, heteroscedasticity and autocorrelation

As mentioned in section 6.2.3, this study does not meet the assumption of normality. However, this does not prevent the use of OLS, as no inferences are drawn from the models. As mentioned in the previous section, it is important to check for multicollinearity by running several auxiliary regressions, as this method is more effective than Pearson’s correlation in detecting hidden correlations among predictor variables. As can be seen from Table 19, the highest R-squared value in the auxiliary regressions is 47%, which indicates that the model is free from a high level of multicollinearity. Adkins and Hill (2012) argue that a model suffers from high multicollinearity when the R-squared of any of the auxiliary regressions is higher than 0.8.

Table 19 Results of auxiliary regressions for the IPO sample

<table>
<thead>
<tr>
<th>Auxiliary Regressions</th>
<th>R-squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td>0.07</td>
</tr>
<tr>
<td>Model 2</td>
<td>0.23</td>
</tr>
<tr>
<td>Model 3</td>
<td>0.37</td>
</tr>
<tr>
<td>Model 4</td>
<td>0.47</td>
</tr>
<tr>
<td>Model 5</td>
<td>0.21</td>
</tr>
</tbody>
</table>

Heteroscedasticity is examined in this research, as Hill et al. (2008) point out that “the least squares estimator is still a linear and unbiased estimator, but is no longer best” (p. 201). A White test is used to test for heteroscedasticity, following Hill et al.’s (2008) suggestion. The p-values of the White test for models 3, 4, 5 and 6 are within the range for retaining the null hypothesis (from 0.5586–0.6150), which leads to the statement that these models are free from heteroscedasticity.

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32 See section 6.2.3 for more details about when the assumption of normality must be met.
Autocorrelation is also examined in this study, as Hill et al. (2008) contend that the least squares estimator is inefficient and, therefore, hypothesis testing is no longer valid when autocorrelation exists in a model. Following their suggestion in testing for autocorrelation, this study uses the Durbin–Watson test. The statistical values of the Durbin–Watson test for models 3, 4, 5 and 6 are within the range for retaining the null hypothesis (from 2.035–2.136), which leads to the statement that these models are free from an autocorrelation problem.

6.3.4 Model 3: Multiple regression analysis of earnings management pre-IPO (H3)

Table 20 shows the results of examining engagement in earnings management in a pre-listing year by conducting a multiple regression analysis (OLS). Table 20 shows that the overall model is statistically significant, as the F-value is 2.48 and the P-value is 0.00. The value of adjusted R-squared is 16%. The adjusted R-squared of this model is higher than the value of 10.3% reported by Ahmad-Zaluki et al. (2011), who examine Malaysian IPO firms. It is also higher than the values of 9.01% and 8.1% reported by Alhadab et al. (2016) and Rakhman (2013), respectively. It is, however, lower than the value of 18.3% reported by Farooq and Benali (2012). As shown in the table, the highest VIF value is 2.48 for the control variable ROA. According to Gujarati (2004), the existence of multicollinearity between explanatory variables is low when the VIF is less than 10. This is a third confirmation that multicollinearity does not exist in this model. In the previous section, a Pearson’s correlation matrix table and auxiliary regressions also confirm that the explanatory variables are not strongly correlated.

Table 20 shows that the coefficient of the dummy variable for the pre-listing year (IPO_B) is not statistically significant at any of the levels considered (1%, 5% and 10%). This finding indicates that Saudi IPO firms do not engage in earnings management measures in relation to current discretionary accruals. This finding contrasts with the hypothesis considered in this section (H3). It also contrasts with signalling theory, which predicts
that historical earnings or earnings reported in prospectuses are inflated to signal a promising economic future for the firm. This result is consistent with the finding of Roosenboom et al. (2003), who examine 65 IPO firms in the Netherlands from 1984 to 1994 and find that IPOs do not manage earnings in pre-IPO years. This finding is also consistent with the result obtained by Alhadab et al. (2016), who examine IPO firms in the UK from 1998 to 2008 in both the main market and an alternative investment market. The finding of Alhadab et al. (2016) confirms the result found by Ball and Shivakumar (2008), who examine IPO firms in the UK from 1992 to 1999 in the main market.

However, this finding is inconsistent with the results obtained by Rakhman (2013) in Indonesia, Nam et al. (2014) in the US, and Chahine et al. (2015) in the case of equity carve-outs33 in the US.

In terms of the control variables, the results indicate that three of them are statistically significant: negative income (NEG), operating cash flow (CFL) and return on assets (ROA). The association between the value of current discretionary accruals and negative income (NEG) is statistically significant and negative at the 1% level, which indicates that firms with negative income tend to engage less in current earnings management.

The ratio of operating cash flow (CFL) is negatively correlated with current discretionary accruals at the 1% level of significance. This result is consistent with the finding in the audit quality model. The result indicates that firms with a higher operating cash flow engage less in earnings manipulation. In other words, high cash flow is an indicator of better performance (Frankel et al., 2002). The association between the value of current discretionary accruals and ROA is statistically significant and positive at the 5% level, which indicates that firms with a higher ROA tend to engage in current earnings management.

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33 Equity carve-outs occur when a firm sells part of a subsidiary to outside investors.
As mentioned in section 6.3.3, the normality assumption has not been met in this study. The Wilcoxon signed-rank test is used to check the robustness of the OLS results. Doane and Seward (2018) state that this approach is used to “test the median difference in paired samples” (p. 693). The test is used in this study to examine differences in the medians of absolute discretionary accruals between the two years before listing. Table 21 shows that the p-value of the Wilcoxon signed-rank test is 0.2082, which suggests that there is an insignificant difference in the absolute discretionary accruals between the two years and
leads, therefore, to the rejection of H3. Furthermore, the result of this test confirms the OLS result in section 6.3.4.

Table 21 Result of Wilcoxon signed-rank test for (H3)

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Statistic Value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>earnings management pre-IPO (H3)</td>
<td>-101.5</td>
<td>0.2082</td>
</tr>
</tbody>
</table>

6.3.5 Model 4: Multiple regression analysis of earnings management in an IPO year (H4)

Table 22 presents the outputs of multiple regressions analysis conducted to test the existence of current earnings management in the year of an IPO. The results indicate that both models are significant, as the F-values are 2.89 (0.00) and 4.33 (0.00), respectively. The results also show that neither model suffers from high multicollinearity, as the VIF values for both models are far from 10, the threshold suggested by Gujarati (2004).

The findings in column (1) show that the coefficient of the dummy variable for the listing year (IPO_Y0) is statistically significant at the 1% level. Following Armstrong et al. (2015), who argue that the existence of discretionary accruals in an IPO year shown in previous studies is due to not controlling for cash proceeds during an IPO, this research controls for cash proceeds. When cash proceeds are included in the model, the findings in column (2) indicate that the coefficient of IPO_Y0 is not statistically significant at any of the levels considered (1%, 5% and 10%). This implies that H4 can be rejected. This result is consistent with Armstrong et al. (2015, p. 2), who offer the explanation that “Since accruals by definition include changes in working capital, any investments in working capital in the same year as the IPO will mechanically increase IPO-year accruals”. The importance of proceeds as a control variable is obvious when adjusted R-squared is compared between the two models: the value increases from 20% to 31%, an
increase of around 55 percentage points. However, the significance of the control variables has not changed for the Proceed variable. The NEG and CFL variables are significant as they are found in the previous (pre-listing year) model.

Table 22 Regression results of earnings management in the year of listing (H4)

To the best of the researcher’s knowledge, this is the first study in a developing country that applies and follows the argument of Armstrong et al. (2015). From the finding of this study, and the finding of Armstrong et al. (2015), all results obtained in previous research (e.g. Alhadab et al., 2016; Teoh et al., 1998c) are misleading, as they do not control for cash proceeds during an IPO event.
6.3.5.1 Alternative research design for earnings management in an IPO year

Table 23 presents the results of regression analysis following the research design of Armstrong et al. (2015), who introduced it to IPO literature. They run their regression without restricting the sample to IPOs, as had been done in previous models. In other words, all firms (IPO and non-IPO) are included in the model. They create a dummy variable that takes ‘1’ if the firm is in the first year of listing and ‘0’ otherwise, and control for cash proceeds during the IPO.

The purpose of running this model was to test if a different research design leads to a different result. The results show that the model is significant overall, as the F-value is 2.46 and significant at the 1% level. The main variables of interest are IPO_0 and Proceed. In the first model, the results show that IPO firms engage in earnings management in an IPO year. Nevertheless, when Proceed is added to control for cash proceeds, the IPO_0 variable becomes insignificant at all levels of significance (1%, 5% and 10%). The importance of controlling for proceeds is obvious, as adjusted R-squared increased from 6% to 8%, a rise of 33 percentage points. As this research design is consistent with the result found in the previous model, the researcher can conclude that there is solid evidence that Saudi IPOs do not engage in earnings management in the year of an IPO.
### Table 23  Regression results of an alternative research design for earnings management in an IPO year (H4)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Without proceeds (1)</th>
<th>With proceeds (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>t</td>
</tr>
<tr>
<td>(Constant)</td>
<td>0.047</td>
<td>0.920</td>
</tr>
<tr>
<td>IPO_Y0</td>
<td>0.056</td>
<td>3.070</td>
</tr>
<tr>
<td>Proceed</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>ASGR</td>
<td>0.010</td>
<td>0.510</td>
</tr>
<tr>
<td>NEG</td>
<td>-0.020</td>
<td>-1.600</td>
</tr>
<tr>
<td>LOGA</td>
<td>-0.002</td>
<td>-0.520</td>
</tr>
<tr>
<td>CFL</td>
<td>-0.259</td>
<td>-6.160</td>
</tr>
<tr>
<td>ROA</td>
<td>0.137</td>
<td>2.570</td>
</tr>
<tr>
<td>LEVE</td>
<td>0.038</td>
<td>1.050</td>
</tr>
<tr>
<td>Complexity</td>
<td>-0.008</td>
<td>-0.970</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variables</th>
<th>Years and industries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjusted R-squared</td>
<td>0.04</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.06</td>
</tr>
<tr>
<td>F-value</td>
<td>2.46</td>
</tr>
<tr>
<td>F-sig.</td>
<td>0.00</td>
</tr>
<tr>
<td>Observation</td>
<td>975</td>
</tr>
</tbody>
</table>

Dependent variable: CURRACC (current discretionary accruals). Variables definitions are listed in table 17.

#### 6.3.5.2 Non-parametric test

As mentioned in section 6.3.3, the normality assumption has not been met in this study. The Wilcoxon signed-rank test is used to check the robustness of the OLS results. The test is used to examine differences in the medians of absolute discretionary accruals between the year before listing and the listing year. Table 24 shows that the p-value of the Wilcoxon signed-rank test is 0.1147, which suggests that there is an insignificant difference in the absolute discretionary accruals between the year before listing and the
listing year and leads, therefore, to the rejection of H4. Furthermore, the result of this test confirms the OLS result in section 6.3.5.

**Table 24 Result of Wilcoxon signed-rank test for (H4)**

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Statistic Value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>earnings management in an IPO year (H4)</td>
<td>126.5</td>
<td>0.1147</td>
</tr>
</tbody>
</table>

**6.3.6 Model 5: Multiple regression analysis of audit quality in pre-IPO years (H5)**

This research adopts OLS regression to test the role of Big 4 firms in mitigating discretionary accruals in a pre-IPO year in Saudi Arabia. The sample of this empirical analysis is restricted to the two years before an IPO to examine the difference in the audit quality before listing. As can be seen from Table 25, the overall model is statistically significant, as the F-value is 3.89 and the P-value is 0.00. The value of adjusted R-squared is 0.43%. The value of adjusted R-squared in this study is higher than the value of 8.4% reported by Vinten et al. (2005).

The variable of interest in this regression analysis is IPO_Big4, which is a dummy variable that takes a value of ‘1’ if the firm is audited by one of the Big 4. The result shows that the IPO_Big4 variable is not statistically significant at any of the levels of significance considered (1%, 5% and 10%). This indicates that the Big 4 auditing firms in Saudi Arabia do not mitigate earnings manipulation in IPO years, which implies that H5 can be rejected. Chang et al. (2008) contend that IPO firms signal the quality of their firm by hiring one of the Big 4 firms. As the finding of this study shows the opposite, signalling theory does not apply in the Saudi IPO context, which indicates that the Big 4 auditors are not used to signalling the quality of their earnings.
This finding is in line with Alhadab et al. (2016), who find that Big N firms do not curb earnings management activities in the UK. However, this result contrasts with the finding of Vinten et al. (2005), who provide evidence that Big 5 auditors mitigate earnings management in IPO firms. The coefficient of negative income and the ratio of cash flow is statistically significant, as the prior IPO models suggest. However, the coefficient of firm size (LOGA) is significant at the 5% level, which indicates that IPO firms of larger size are involved in earnings management in the years before an IPO.

6.3.6.1 Non-parametric test

As previously mentioned, the normality assumption has not been met in this study. Thus, the Wilcoxon rank sum (Mann-Whitney) test is used to verify the robustness of the OLS
results. The test is used to examine differences in the medians of absolute discretionary accruals between Big 4 and non-Big 4 audit firms in pre-IPO years. Table 26 shows that the p-value of the Wilcoxon rank sum test is 0.2895, which implies rejection of H5. Furthermore, the result of this test confirms the OLS result in section 6.3.6.

Table 26 Result of Wilcoxon rank sum test for (H5)

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Statistic Value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Big 4 audit firms vs non-Big 4 audit firms in pre-IPO years (H5)</td>
<td>-1.0651</td>
<td>0.2868</td>
</tr>
</tbody>
</table>

6.3.7 Model 6: Multiple regression analysis of the audit quality of Deloitte, Big 3 vs non-Big 4 pre-IPO years (H6)

Table 27 shows the outputs of multiple regressions analysis conducted to test H6. The sample cannot be restricted to the Big 4 alone in order to make a comparison between Deloitte and the rest of the Big 4, due to the sample size. Therefore, the sample contains Big 4 and non-Big 4 firms. Two dummy variables were created: one for Deloitte and another for the rest of the Big 4.

Table 27 shows that the overall model is statistically significant, as the F-value is 3.84 and the P-value is 0.00. The value of adjusted R-squared is 44%, which is close to the value in model 5. The variable of interest in this regression analysis is IPO_DELO, which is a dummy variable that takes the value of ‘1’ if the firm was audited by Deloitte. The results show that the IPO_DELO variable is not statistically significant at any of the levels of significance considered (1%, 5% and 10%). This indicates that pre-IPO firms audited by Deloitte did not engage in earnings management activities, which leads to a rejection of H6. This is consistent with the result obtained in model 2. This result is a second
confirmation related to the ban on Deloitte. In terms of the control variables, NEG, LOGA and CFL are significant, as for the finding of model 5.

\textit{Table 27 Regression results of the audit quality of Deloitte, Big 3 vs non-Big 4 pre-IPO years (H6)}

<table>
<thead>
<tr>
<th>Variables</th>
<th>Unstandardised coefficients</th>
<th>Collinearity statistics</th>
<th>Expected direction</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. error</td>
<td>t</td>
</tr>
<tr>
<td>(Constant)</td>
<td>-0.555</td>
<td>0.305</td>
<td>-1.820</td>
</tr>
<tr>
<td>IPO_DELO</td>
<td>-0.037</td>
<td>0.041</td>
<td>-0.920</td>
</tr>
<tr>
<td>IPO_Big3</td>
<td>0.006</td>
<td>0.046</td>
<td>0.130</td>
</tr>
<tr>
<td>ASGR</td>
<td>-0.087</td>
<td>0.055</td>
<td>-1.580</td>
</tr>
<tr>
<td>NEG</td>
<td>-0.546</td>
<td>0.129</td>
<td>-4.240</td>
</tr>
<tr>
<td>LOGA</td>
<td>0.047</td>
<td>0.022</td>
<td>2.130</td>
</tr>
<tr>
<td>CFL</td>
<td>-0.566</td>
<td>0.151</td>
<td>-3.740</td>
</tr>
<tr>
<td>ROA</td>
<td>0.383</td>
<td>0.247</td>
<td>1.550</td>
</tr>
<tr>
<td>LEVE</td>
<td>-0.048</td>
<td>0.139</td>
<td>-0.340</td>
</tr>
<tr>
<td>Complexity</td>
<td>0.010</td>
<td>0.032</td>
<td>0.330</td>
</tr>
</tbody>
</table>

\textbf{Dummies} | Years and industries | Dependent variable: CURRACC (current discretionary accruals) Variables definitions are listed in table 17.

| Adjusted R-squared | 0.44 |
| R-squared          | 0.60 |
| F-value            | 3.84 |
| F-sig.             | 0.00 |
| Observation        | 84   |

\textit{6.3.7.1 Non-parametric tests}

As has been mentioned, in section 6.3.3, the normality assumption has not been met in this study. The Wilcoxon rank sum (Mann-Whitney) test is used to check the robustness of the OLS results. The test is used to examine differences in the medians of absolute discretionary accruals between Deloitte and non-Big 3 in pre-IPO years. Table 28 shows
that the p-value of the Wilcoxon rank sum test is 0.2895, which suggests that there is an insignifiant difference in the absolute discretionary accruals between Big 4 and non-Big 4 auditors and leads, therefore, to rejection of H6. Furthermore, the result of this test confirms the OLS result in section 6.3.7.

Table 28 Result of Wilcoxon rank sum test for (H6)

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Statistic Value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deloitte firm vs non-Big Deloitte in pre-IPO years (H6)</td>
<td>-0.8529</td>
<td>0.3937</td>
</tr>
</tbody>
</table>

6.3.9 Discussion

This study is the first to be conducted on earnings management in the context of Saudi IPOs. This study finds no evidence that IPO firms engage in earnings management in Saudi Arabia. The number of firms that went public in Saudi Arabia between 2005 and 2015 is 58, which is a very low figure. The Saudi market is highly liquid, as IPO firms are always oversubscribed. For example, the Electrical Industries Company went public in 2014 and was 522.7% oversubscribed. Another example shows that the United Electronics Company went public in 2011 and was 214.9% oversubscribed. The researcher argues that, as only a small number of firms went public in Saudi Arabia and the market is characterised as being highly liquid, IPO firms in this context are not motivated to engage in earnings management, since investors will buy their shares anyway. Thus, the notion that IPOs use earnings reported in prospectuses to convey the impression to future investors that the firm has a promising economic future is not

34 See https://goo.gl/RDXnGj.
35 See https://goo.gl/GzyqEZ.
36 The researcher has reviewed all the news related to IPOs and finds that all IPOs in Saudi Arabia are oversubscribed.
applicable in Saudi Arabia as there is no need to engage in earnings management to signal
the true value of a firm due to high liquidity in the Saudi Market. Moreover, Roosenboom
et al. (2003, p. 255) argue that “the timing of the IPO may limit firms’ ability and need to
make income-increasing accruals in financial statements preceding the IPO”, which could
be another explanation for the lack of engagement in earnings management pre-IPO.

As this study finds (in section 6.2) that there is no role for Big 4 accounting firms in
mitigating income-increasing activities, this study confirms that there is no role for Big 4
accounting firms in the context of IPOs, which indicates that IPOs do not use Big 4 firms
as a signal due to the expectation of oversubscription. Therefore, the finding of this study
is inconsistent with the argument of signalling theory, which suggests that managers of
IPOs use historical earnings and auditor reputation as positive signals that they send to
future investors.

6.4 Summary

The aim of this research is to examine audit quality in Saudi Arabia among 85 firms in
the Kingdom. It also aims to examine earnings management and audit quality among 42
IPO firms. The size of the auditor is used in this research as a proxy for audit quality. The
model generated by Kothari et al. (2005) is adopted in this research, as they demonstrate
that the Jones and modified Jones models suffer from errors in measuring discretionary
accruals.

The empirical analysis shows that firms audited by one of the Big 4 auditors do not differ
from firms audited by non-Big 4 auditors in terms of mitigating absolute discretionary
accruals for the period from 2004 to 2014. As absolute discretionary accruals do not
examine the effect of external auditors on the sign of discretionary accruals, the sample
is partitioned into two sub-samples: positive discretionary accruals and negative
discretionary accruals. In the positive sample, the results show no difference between Big
4 and non-Big 4 auditing firms in terms of curbing positive earnings management. However, this finding is contrasted when negative discretionary accruals are examined. The results show that Big 4 firms are more effective than non-Big 4 in constraining negative discretionary accruals in Saudi Arabia. This study also examines the difference in audit quality between the two groups using current discretionary accruals as an additional form of analysis. The empirical analysis from current discretionary accruals measurement shows that no differences exist between the Big 4 and non-Big 4 groups.

In response to the banning of Deloitte in Saudi Arabia by the CMA, this study investigates if the audit quality in firms audited by Deloitte differs from firms audited by the rest of the Big 4. This study also examines if firms audited by Deloitte differ from firms audited by the other Big 4 in managing absolute, positive or negative discretionary accruals. The results show that the level of discretionary accruals does not vary between the Big 4 auditors. Another confirmation comes from the regressions analysis conducted using current discretionary accruals. Deloitte does not differ from the rest of the Big 4 in constraining current discretionary accruals.

The multiple regression analysis of IPO firms shows that Saudi IPOs are not involved in earnings management activities before going public, namely, in the years before listing. It also shows that firms do not engage in earnings management activities in the year of listing. This conclusion is drawn after controlling for cash proceeds during an IPO, following the argument presented by Armstrong et al. (2015). With regard to audit quality in IPO firms, the empirical analysis shows that IPO firms audited by one of the Big 4 auditors do not differ from firms audited by non-Big 4 auditors in terms of mitigating discretionary accruals.
Chapter 7: Conclusion

7.1 Summary of Research Motivation, Objectives and Methodology

This research aimed to examine earnings management practices in Saudi Arabia. The research mainly examined the role of external auditors in mitigating earnings management engagement in Saudi listed firms. It also examined earnings management around IPOs and the role of external auditors in curbing earnings management engagement in these firms.

This research was mainly motivated by the ban placed on Deloitte by the CMA from conducting any auditing work for listed firms in Saudi Arabia for two years from 1 June 2015. Banning one of the Big 4 audit firms raised a question regarding the quality of auditing in the Saudi environment, particularly as this was the first ban imposed by the CMA since it was established. The ban also motivated the researcher to investigate the phenomenon of earnings management in IPO firms, as the ban on Deloitte was in response to the collapse of the Al-Mojil Group in 2012, the group having gone public in 2008. Deloitte had audited the Al-Mojil Group from 2005 to 2011.

Six objectives were developed in this study. Two objectives were related to audit quality and four to the IPO context. This study examined the role of Big 4 auditors as a deterrent to earnings management engagement in Saudi listed firms and whether firms audited by Deloitte managed earnings compared with firms audited by the rest of the Big 4. Moreover, this study examined earnings management before an IPO event and whether engagement in earnings management was higher in the year of the IPO.

One of the main philosophical positions adopted in accounting research is positivism, which presumes an absolute separation between the researcher and the subject. The findings of the research, according to this position, can be generalised and result from causal effects. This study adopted this position. The research strategy of this study was
quantitative, as it gathered and examined numerical data and conducted statistical tests to test the hypotheses developed in this research. As this study depended on agency, stakeholder, legitimacy and signalling theories to develop the hypotheses of the current research, a deductive approach was adopted. The first source of knowledge in this approach is theory, and it proceeds by conducting empirical examination.

This study adopted Kothari et al. (2005) in estimating discretionary accruals and applied a cross-sectional method to do this. The estimation model was run yearly for each industry and the sample was restricted to a minimum of eight observations in each industry per year. Whereas, for the IPO sample, the estimation model was run yearly instead of on an industry basis as running an estimation model by industry excludes some IPO firms. This study included a number of firm financial characteristics as control variables that had an impact on discretionary accruals: firm size, cash flow, firm leverage, firm performance, firm growth, firm age, SOE and complexity. This study adopted OLS regression to test the research hypotheses. The research design of this study for testing earnings management followed McNichols and Wilson (1988) and was developed using Dechow et al. (1995). The sample for testing hypotheses relating to audit quality contained 85 non-financial firms for the period from 2004 to 2014, whereas the sample for testing hypotheses relating to IPO contained 42 IPO firms that went public between 2005 and 2015.

7.2 Summary of the Findings

This study developed six research questions that were answered using OLS regression. The first two research questions related to audit quality, whereas the rest of the questions are concerned with earnings management around IPOs and audit quality in the context of IPOs.
The first sample in this study was used to answer the first two research questions. The main findings in this sample are as follows.

- The mean of absolute discretionary accruals was 0.0477, with a maximum of 0.2365 and a minimum of 0.0001, which indicates that the variation in discretionary accruals among the firms was very high. The minimum value indicates that some firms did not engage in earnings management.

- Regarding the descriptive statistics for the audit quality sample, it is worth highlighting the following: 57.36% of the firms in the sample were audited by one of the Big 4 firms, which indicates that the market is dominated by the Big 4 auditors as 178 accounting firms are licensed to practice in Saudi Arabia. The result shows that 45% of the firms had at least one subsidiary. The average value of the leverage was 0.1011, which indicates that the firms did not rely on long-term debt to fund their assets.

- There was no role for Big 4 firms in curbing earnings management activities, as indicated by the regression result of absolute discretionary accruals. However, the regression result of signed discretionary accruals showed a contrast and indicated that the Big 4 mitigate the activities of income-decreasing activities only in the Kingdom of Saudi Arabia, which is in contrast with three previous studies that examined the role of Big 4 firms in Saudi Arabia. This study found that there was no role of Big 4 firms in constraining current discretionary accruals, either positive or negative.

- This study examined the ban placed on Deloitte undertaking any audit work for firms listed on the SSM and found that firms audited by Deloitte did not differ from firms audited by the rest of the Big 4 in terms of earnings management. This study examined absolute discretionary accruals, signed discretionary accruals, absolute current discretionary accruals, and signed current discretionary accruals and found no evidence that firms audited by Deloitte engaged in earnings manipulation activities.
- The output of the regression analysis showed that firms with a growth in assets engaged in income-increasing activities, either in the entire sample or in the sample of firms audited by the Big 4. This may indicate that Saudi listed firms use accounting methods that allow less recognition of depreciation expenses in the early years.

- Regarding the descriptive statistics for the IPO sample, 40.48% of IPO firms chose Big 4 auditors to audit their pre-IPO financial statements and 57.17% of IPO firms had at least one subsidiary. The mean value of leverage was 0.0784, which was lower than the value of 0.1011 in the non-IPO sample. This is to be expected, as some IPO firms raise capital during the IPO stage, which indicates that IPO firms rely on raising capital rather than long-term debt.

- The regression results regarding earnings management around listings indicated that there was no evidence to presume that IPO firms in Saudi Arabia manipulate earnings before going public.

- The regression result of earnings management in an IPO year indicated that IPO firms engaged in earnings management in the year of an IPO. Nevertheless, the result showed a contrast when the researcher added the cash proceeds during an IPO event. This study followed Armstrong et al. (2015), who argue that the existence of discretionary accruals in an IPO year shown in previous studies is due to not controlling for cash proceeds during an IPO event. Therefore, Saudi IPO firms did not engage in earnings management in an IPO year. This study is the first to examine this in developing countries and the first to confirm this from a different sample.

- The regression result of audit quality in pre-IPO years showed that Big 4 firms were not a deterrent to engagement in earnings management in pre-IPO years. In other words, the audit quality of the Big 4 firms did not differ from that of other accounting firms.
• The regression result demonstrated that IPO firms audited by Deloitte did not engage in earnings management and did not differ from the rest of the Big 4 or other accounting firms.

### 7.3 Contributions of the Study

This study adds to existing knowledge of audit quality and earnings management as previous research has not reached the same conclusions in terms of the role of the Big 4 auditors in mitigating engagement in earnings management. Studies such as Becker et al. (1998), Francis et al. (1999) and Houqe et al. (2017) find that firms audited by one of the Big N show less engagement in earnings management, whereas studies such as Jeong and Rho (2004), Piot and Janin (2007) and Huguet and Gandia (2016) find no association between earnings management and Big N auditors. This study contributes to Saudi literature, as the existing material is limited. This research is the first to examine the ban placed on Deloitte by the CMA in Saudi Arabia and provide empirical evidence regarding the issue.

Moreover, this study is the first to examine earnings management around IPOs in the context of Saudi Arabia. This study contributes to IPO and earnings management literature, as there is a conflict in the findings. Studies such as Teoh et al. (1998b), Alhadab et al. (2015) and Gao et al. (2017) find that firms engage in earnings inflation around IPOs, whereas Ball and Shivakumar (2008), Cecchini et al. (2012), Kimbro (2005) and Roosenboom et al. (2003) find no engagement in earnings management around IPOs. This study also adds to IPO and earnings management literature by adopting the methodology of Armstrong et al. (2015) in a different legal environment and considering a developing country. Moreover, it adds to existing knowledge of audit quality and earnings management in the context of IPOs as it examines the role of the Big 4 in curbing
earnings management. It also provides empirical evidence that IPO firms audited by Deloitte did not engage in upwards earnings management.

7.4 Implications of the Study

This research has several implications for investors, lenders, firms and policy-makers. The first implication is that investors should not perceive Big 4 auditors as providing higher quality auditing than non-Big 4 auditors. The results suggest that Big 4 auditors are better only in relation to income-decreasing activities. Moreover, lenders should not perceive Big 4 auditors as providing higher quality auditing than non-Big 4 auditors in terms of mitigating earnings management manipulations. Lenders could impose some conditions on borrowers to improve audit quality, such as appointing an auditor that specialises in the industry, as Balsam et al. (2003) and Krishnan (2003a) find that discretionary accruals are high when firms are audited by non-industry-expert auditors in the US context. Furthermore, firms’ management (particularly, the board of directors) should be aware that paying higher audit fees to Big 4 auditors will not prevent positive accruals earnings management in the firm. Firms may hire non-Big 4 auditors that might be keen to build a good reputation in the market and will, therefore, provide higher audit quality with lower audit fees.

Policy-makers such as the CMA and the MCI in Saudi Arabia should implement policies that reduce the domination of the Big 4, as the descriptive statistics show that 57.36% of the firms in the sample were audited by one of the Big 4, whereas there are 178 accounting firms licensed to practice in Saudi Arabia. This denomination may explain small degree of impact of the Big 4 on audit quality, as they might be keen to retain their clients and so mitigate the quality of auditing. The researcher adopts the call for limiting external auditors to auditing only five listed firms, which would open the door for small audit

See the article by AlKhataf (2015) in the Asharq Alawsat newspaper.
firms to audit listed firms and minimise the domination of the Big 4 in the auditing of listed firms. Moreover, this may lead to auditors being concerned about the quality of auditing, as the market will be more competitive. This may also lead small auditors to become specialised in an industry in order to be able to compete and survive in the market of auditing listed firms. This study also calls for greater transparency by the CMA regarding the ban on Deloitte in Saudi Arabia, as the results of this study suggest there is no difference in audit quality between Deloitte and the rest of the Big 4. Reviewing news articles and reading the order issued by the CMA do not clarify the underlying reason behind the ban.

While this research finds Big 4 auditors to be less effective at mitigating positive earnings management, the researcher also has deep concerns about the audit quality of non-Big 4 auditors. Therefore, this study also calls for close monitoring of external auditors by SOCPA to improve the professional environment, particularly as Alghamdi and Alangari (2005) report violations in implementing quality review programmes in audit firms. Moreover, the CMA should adopt a policy that prevents inexperienced auditors auditing listed firms, particularly as the CMA has enormous powers to regulate listed companies under the new Companies Law (issued in 2015).

In addition to its practical associations, this study offers theoretical implications. Agency theory was adopted in the current research, as Piot and Janin (2007) argue that agency conflict may create motivations for managers to engage in earnings management. To mitigate the desire of managers to engage in earnings management, agency theory recognises external auditors as a monitoring device (Piot, 2001). However, the finding of this study is inconsistent with the argument of agency theory, which indicates that Big 4 accounting firms, which are presumed to offer higher quality auditing, are less effective in curbing earnings management in the Saudi context. Alghamdi (2012) argues that the legal system in Saudi Arabia, which differs from that in all other countries, may mitigate
the role of external auditors as a monitoring device. Moreover, the weakness of the accounting profession in Saudi Arabia may mitigate the monitoring role of external auditors, as local standards are in use (only 23 for accounting and 17 for auditing) and US and IFRS standards are employed to fulfil accounting standards that are otherwise lacking. Francis et al. (1999, p. 19) argue that external auditors “have a strong negotiating stance with clients in terms of required adjustments to the financial statements”. However, this argument may not be present in Saudi Arabia, as firms can use either US or IFRS to recognise transactions that the local standards do not cover. Therefore, external auditors may not be in a strong position to make adjustments to the recognition of a particular transaction.

Stakeholder theory was adopted in the current research, as Healy and Wahlen (1999) state that some stakeholders might be misled about underlying economic performance by a firm’s engagement in earnings management. Therefore, stakeholders may impose a need for high audit quality, as they have the ability to monitor earnings management activities in listed firms (Ming Chia et al., 2007). However, the finding of this study is inconsistent with the argument of stakeholder theory. This contrast with the theory may be explained by Sternberg (1997), who argues that stakeholder theory is incompatible with the agent-principal association, in which the principal directs risk and delegates decision-making to the agent. The agent-principal association is very clear in the Saudi context, as Albassam (2014) argues that firms on the SSM are largely owned by government and family shareholdings, which leads firms to preference the interests of shareholders over those of other stakeholders. Legitimacy theory was adopted in this research to explain why firms appoint Big N auditors and Big N auditors are perceived as providing higher-quality auditing services. This theory suggests that firms hire Big N auditors to legitimise financial statements. In addition, Big N auditors legitimise their own work by persuading

38 From 1 January 2017, all listed firms have to abide by IFRS.
stakeholders that financial reports can be trusted. However, the finding of this study is inconsistent with the argument of this theory.

Signalling theory was adopted in this research to explain the engagement in earnings management around an IPO. Signalling theory is considered as significant for IPO studies because of the existence of information asymmetry between two parties: IPO management and potential buyers (Brau & Fawcett, 2006). Previous research shows that multiple signals might be used during an IPO stage. Two signals were examined in this current research: reported earnings and auditor reputation. However, the finding of this study is inconsistent with the argument of signalling theory, which suggests that neither pre-IPO reported earnings nor auditor reputation are used by Saudi IPO firms. As the researcher of this study argues (see section 6.3.8), as only a small number of firms have gone public in Saudi Arabia and the market is characterised as being highly liquid, IPO firms in this context are not motivated to engage in earnings management, since investors will buy their shares anyway. Therefore, there is no need to use a signal to overcome the high level of information asymmetry that exists in IPO firms in Saudi Arabia.

7.5 Research Limitations and Suggestions for Future Research

Any piece of research will have some limitations that can be considered in future work. The limitations of this research and suggestions for future work are presented below.

- Prior studies offer a number of proxies for accruals earnings management and each model has its own limitations and errors in estimating non-discretionary accruals. Therefore, there is a general concern about the precision of these proxies in capturing accruals earnings manipulation. All accruals-based models suffer from imprecision in estimating discretionary accruals (Guay, Kothari, & Watts, 1996). Furthermore, accruals models have a lack of power in isolating discretionary accruals (Dechow, Hutton, Kim, & Sloan, 2012). Despite these criticisms, numerous studies continue to
use these models in examining accruals earnings management. These models remain the most suitable, however, due to the lack of an existing model that can enhance the power of measuring discretionary accruals.

- This study used the Big 4 as a proxy for audit quality, whereas the literature offers different types of proxies that may be used to measure audit quality in earnings management studies. The researcher had no access to the information needed to use other proxies, such as audit fees and audit hours. Moreover, using industry specialization as an auditor proxy has major limitations, as Audousset-Coulier et al. (2016) examine 30 industry specialist auditor proxies and conclude that the classification of an individual auditor as a specialist in the industry is based on the proxy used. Therefore, although this study used the Big 4 as a proxy of audit quality, this proxy has a limitation, in that it assumes that the level of audit quality is homogeneous within the group (Clarkson & Simunic, 1994).

- Litigation risk increased for external auditors after the ban and the fine of 300 thousand SR imposed on Deloitte. Moreover, there is a notion that audit fees increased after the ban on Deloitte. Thus, further research could examine the quality of reporting for former Deloitte clients after the ban, for example see (Blouin et al., 2007).

- This study examined earnings management in IPO firms in the main market. On 26 February 2017, the CMA opened a second market, called the Nomu (or parallel market), which has lighter listing rules. Comparing IPO firms in the two markets in terms of engagement in earnings management could be another avenue for future research.

- Future research could examine the association between earnings management and the stock performance of IPO firms, as well as the association between earnings management and accounting performance.
• Future research could investigate the ban on Deloitte by conducting interviews with officials at the CMA and Deloitte firm as the present quantitative research failed to find any engagement in earnings management in firms audited by Deloitte. The method suggested for future research may reveal why Deloitte was banned.
References:


Hill, R. C., Griffiths, W. E., & Lim, G. C. (2014). Introduction to econometrics. *Instructor (s).*


Appendices

Appendix A: List of firms in the audit quality sample

<table>
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Appendix B: List of firms in IPOs sample

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# Research Ethics Review Checklist

Please include this completed form as an appendix to your thesis (see the Postgraduate Research Student Handbook for more information).

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If you are unsure about any of the following, please contact the local representative on your Faculty Ethics Committee for advice. Please note that it is your responsibility to follow the University’s Ethics Policy and any relevant University, academic or professional guidelines in the conduct of your study.

Although the Ethics Committee may have given your study a favourable opinion, the final responsibility for the ethical conduct of this work lies with the researcher(s).

## UKRIO Finished Research Checklist:

(If you would like to know more about the checklist, please see your Faculty or Departmental Ethics Committee rep or see the online version of the full checklist at: [http://www.ukrio.org/what-we-do/code-of-practice-for-research/](http://www.ukrio.org/what-we-do/code-of-practice-for-research/))

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<td></td>
<td>b) Have all contributions to knowledge been acknowledged?</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td></td>
<td>c) Have you complied with all agreements relating to intellectual property, publication and authorship?</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td></td>
<td>d) Has your research data been retained in a secure and accessible form and will it remain so for the required duration?</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td></td>
<td>e) Does your research comply with all legal, ethical, and contractual requirements?</td>
<td>YES</td>
<td>NO</td>
</tr>
</tbody>
</table>

## Candidate Statement:

I have considered the ethical dimensions of the above named research project, and have successfully obtained the necessary ethical approval(s).

**Ethical review number(s) from Faculty Ethics Committee (or from NRES/SCREC):** NO

If you have not submitted your work for ethical review, and/or you have answered ‘No’ to one or more of questions a) to e), please explain below why this is so:

I used secondary data.

Signed (PGRS): [Signature]

Date: 04/01/2018