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The Effect of Corporate Governance Mechanisms on Earnings Management Practices in Saudi Listed Companies



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دراسات نقدية 3



سوف نستعرض تحليل الدراسة
و ابداء الملاحظات لتطوير الدراسة
و اقتراحات لبحوث مستقبلية.



Chapter
03

بيانات الدراسة:

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تتناول هذه الرسالة دراسة أثر آليات الحوكمة المؤسسية على ممارسات إدارة الأرباح في الشركات السعودية المدرجة في سوق المال، وذلك في ضوء لائحة حوكمة الشركات السعودية.



Chapter
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تحليل الدراسة المختارة:

تناولت الدراسة العلاقة بين آليات الحوكمة المؤسسية مثل خصائص مجلس الإدارة ولجنة المراجعة وهياكل الملكية وبين ممارسات إدارة الأرباح في الشركات السعودية المدرجة.
وقد اعتمدت الدراسة على تحليل بيانات الشركات المدرجة في السوق المالي السعودي خلال فترة زمنية ممتدة، بهدف اختبار مدى فاعلية آليات الحوكمة في الحد من ممارسات إدارة الأرباح.

وتوصلت الدراسة إلى أن الشركات التي تتمتع بمستوى أعلى من الامتثال لمتطلبات الحوكمة تكون أقل ميلاً إلى ممارسة إدارة الأرباح، كما بينت النتائج أن بعض آليات الحوكمة مثل استقلالية مجلس الإدارة وحجم المجلس وعدد اجتماعات لجنة المراجعة ترتبط بانخفاض ممارسات إدارة الأرباح.
كما أظهرت الدراسة أن طبيعة الملكية، وخاصة الملكية العائلية، قد تؤثر في العلاقة بين الحوكمة وإدارة الأرباح داخل الشركات.



Chapter
03

الملاحظات على الدراسة:

على الرغم من أهمية الدراسة وحداثتها في البيئة السعودية، إلا أنه يمكن تسجيل عدد من الملاحظات العلمية عليها، من أبرزها:

- ركزت الدراسة بشكل رئيسي على إدارة الأرباح المحاسبية ولم تتناول بصورة موسعة إدارة الأرباح الحقيقية المرتبطة بالقرارات التشغيلية داخل الشركات.
- اعتمدت الدراسة على المنهج الكمي وتحليل البيانات الثانوية فقط، وهو ما قد يحد من تفسير الأسباب السلوكية والتنظيمية التي تدفع المديرين إلى ممارسة إدارة الأرباح.
- اقتصرت الدراسة على الشركات المدرجة في السوق المالي السعودي، وهو ما قد يجعل تعميم النتائج على قطاعات أخرى أو دول أخرى محدوداً.
- استخدمت الدراسة مؤشراً مركباً للحوكمة يضم عدداً كبيراً من البنود، دون إعطاء أوزان مختلفة لهذه البنود بحسب أهميتها النسبية.



Chapter
03

التوصيات لتطوير الدراسة:

بناءً على التحليل السابق، يمكن تقديم عدد من التوصيات التي قد تسهم في تطوير هذا النوع من الدراسات، ومن أهمها:

- توسيع نطاق القياس ليشمل أنواعاً أخرى من إدارة الأرباح مثل إدارة الأرباح الحقيقية.
- استخدام مناهج بحث مختلطة تجمع بين التحليل الكمي والمقابلات النوعية مع أعضاء مجالس الإدارة أو لجان المراجعة.
- تطوير مؤشرات أكثر دقة لقياس جودة الحوكمة بحيث تعكس الأهمية النسبية لكل آلية من آليات الحوكمة.
- إجراء دراسات مقارنة بين الشركات العائلية وغير العائلية لفهم تأثير نمط الملكية على فعالية الحوكمة.



Chapter
03

مقترحات لبحوث مستقبلية:

استناداً إلى ما توصلت إليه الدراسة، يمكن اقتراح عدد من الموضوعات البحثية المستقبلية، منها:

- دراسة أثر الحوكمة المؤسسية على إدارة الأرباح الحقيقية في الشركات السعودية.
- دراسة العلاقة بين الحوكمة المؤسسية وجودة التقارير المالية في الشركات العائلية.
- تحليل أثر آليات الحوكمة على الأداء الاستراتيجي للشركات وليس فقط الأداء المالي.
- دراسة دور الحوكمة في تعزيز الشفافية والاستدامة المؤسسية في المنظمات.



Chapter
03

رأيي كباحث:

من وجهة نظري كباحث،
تُعد هذه الدراسة إضافة مهمة في مجال الحوكمة المؤسسية في البيئة السعودية ، حيث تناولت العلاقة بين آليات الحوكمة وممارسات إدارة الأرباح في الشركات المدرجة.
وتتميز الدراسة باستخدام بيانات فعلية للشركات خلال فترة زمنية مناسبة .. إلا أنها ركزت بشكل أساسي على التحليل الكمي، مما قد يحد من تفسير الجوانب التنظيمية والسلوكية داخل مجالس الإدارة.
لذلك ، يمكن تطوير هذا المجال البحثي من خلال دمج المناهج الكمية والنوعية في الدراسات المستقبلية.



Chapter
03

الخاتمة:

تناولت هذه المهمة تحليل رسالة دكتوراه تناولت أثر آليات الحوكمة المؤسسية على ممارسات إدارة الأرباح في الشركات السعودية المدرجة.

وقد أظهرت الدراسة أن الامتثال لممارسات الحوكمة يسهم في الحد من ممارسات إدارة الأرباح وتعزيز جودة التقارير المالية ، كما أبرز التحليل أهمية بعض آليات الحوكمة مثل استقلالية مجلس الإدارة ودور لجنة المراجعة في تعزيز الرقابة والشفافية داخل الشركات.

وفي المقابل، أظهرت الدراسة أن بعض العوامل مثل طبيعة الملكية قد تؤثر في فعالية هذه الآليات وبناء على ذلك .. تؤكد نتائج الدراسة أهمية تطوير ممارسات الحوكمة المؤسسية وتعزيز تطبيقها في الشركات، لما لذلك من دور في دعم الشفافية وتحسين جودة التقارير المالية وتعزيز الثقة في الأسواق المالية.

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The Effect of Corporate Governance Mechanisms on Earnings Management Practices in Saudi Listed Companies

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BSc, MAcc

Submitted in Fulfilment of the Requirements for the Degree of Doctor of Philosophy in Accountancy

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June 2023

ABSTRACT

The main objective of this thesis is to examine the impact of corporate governance mechanisms on earnings management practices in Saudi Arabia. To achieve this aim, the study first analyses the relationship between the level of compliance with the Saudi Corporate Governance Code (SCGC) and earnings management practices by employing a self-constructed corporate governance index (i.e., the compliance-index model), derived mainly from the 2017 Saudi Corporate Governance Code. Second, the study examines the association between a number of individual corporate governance mechanisms (i.e., the equilibrium-variable model) and earnings management practices in Saudi listed firms. Third, it examines the influence of family ownership on the association between corporate governance mechanisms (measured by a comprehensive governance index) and earnings management practices in Saudi listed firms. Through use of a sample of 112 Saudi listed firms between 2006 and 2017 (i.e., 994 firm-year observations) together with insights from agency theory, the compliance index model produces results showing a statistically significant and negative association between the Saudi Corporate Governance Index (SCGI) and the level of earnings management practices. However, this result does not hold for firms with high family ownership, since the results reveal that the effectiveness of corporate governance (measured by the SCGI) in constraining earnings management is reduced in Saudi firms with high family ownership. In a series of sensitivity analyses, this evidence is robust to (i) alternative earnings management models, (ii) endogeneity, and (iii) alternative proxy for family control.

Regarding the equilibrium-variable model, the results indicate that Saudi firms are likely to have lower levels of earnings management practices if they have a high percentage of strictly independent directors on the boards, a larger board size, and audit committees that meet more often. Additionally, the results show that Saudi firms with higher government ownership, institutional ownership and family ownership have lower levels of earnings management practices. In contrast, the current study did not find any evidence that the strict independence of audit committee index, percentage of directors with multiple directorships, percentage of family directors on the board and percentage of blockholders ownership have any significant relationship with the extent of earnings management practices in the Saudi firms. Also, the study found that non-strict board/audit independence is not effective in

reducing earnings management practices in Saudi firms. These results are moderately robust to (i) alternative earnings management models, (ii) endogeneity, and (iii) alternative proxies for strict board independence. Finally, the findings of this study indicate the effectiveness of the governance provisions provided in the 2017 Saudi Corporate Governance Code in improving governance practices in the Saudi context.

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AUTHOR'S DECLARATION

"I declare that, except where explicit reference is made to the contribution of others, that this dissertation is the result of my own work and has not been submitted for any other degree at the University of Glasgow or any other institution."

Printed Name: **Bayan Almalki**

Signature:

LIST OF ABBREVIATIONS

Abbreviation	Definition
CGQ	Corporate Governance Quotient
CLSA	Credit Lyonnais Security Asia
CMA	Capital Markets Authority
GA	General Assembly
GAAP	Generally Accepted Accounting Principles
GDP	Gross Domestic Product
GICS	Global Industry Classification Standard
GMI	Governance Metrics International
IFRS	International Financial Reporting Standards
IPO	Initial public offering
IRRC	Investors Responsibility Research Centre
ISS	Institutional Shareholder Services
M&A	Mergers and acquisitions
MENA	Middle East and North Africa
MSCI	Morgan Stanley Capital International
OECD	Organization for Economic Cooperation and Development
OLS	Ordinary least squares
OPEC	Organization of the Petroleum Exporting Countries
PCA	Principal component analysis
SAMA	Saudi Arabian Monetary Agency
SEC	Securities and Exchange Commission
SOCPA	Saudi Organization for Certified Public Accountants
SOX Act	Sarbanes-Oxley Act
Tadawul	Saudi Stock Exchange

CHAPTER ONE

Introduction

1 Introduction

Over the past two decades, a number of giant public corporations, such as Enron and WorldCom, have collapsed due to the involvement in fraudulent financial reporting (Ravisankar et al., 2011). Studies show that these aggressive accounting practices stem from earnings management practices (Rahman et al., 2016; Persons, 2005; Hasnan et al., 2013). However, the collapse of these companies has damaged their reputation and raised the shareholders' and stakeholders' concerns about the transparency and credibility of the financial information disclosed by the companies (Katmon & Farooque, 2017). Therefore, to restore the confidence of the stakeholders in capital markets and to minimise earnings management practices, regulatory bodies have imposed corporate governance rules after the occurrence of the corporate financial scandals.

For example, in the US, after the collapse of Enron and other high-profile American companies, the Sarbanes-Oxley Act of 2002 was introduced and applied to all listed companies in the US (Persons, 2005). Likewise, in the Saudi context, corporate governance reforms were established in the wake of the 2006 Saudi stock market crisis (Al-Faryan, 2020). Due to this crisis, the Saudi Capital Market Authority (CMA) in 2006 issued the first corporate governance code in Saudi Arabia to alleviate the negative implications of the Saudi stock market crash. The crisis resulted in the Saudi stock market losing about 50% of its market capitalisation at that time.(Gerged & Agwili, 2020). Therefore, the Saudi policymakers introduced the new governance regulations to restore investors' confidence in the Saudi capital market and address the issues that contributed to the Saudi market crash. These issues included the absence of solid governance regulations, weak legal framework, lack of accountability, weak investor protections, and lack of disclosure and transparency in the financial reporting of Saudi listed firms (Bahrawe et al., 2016; Al Nasser, 2020; Al Otaibi, 2019).

Although the introduction of the 2006 Saudi corporate governance code has improved the governance and the disclosure practices of Saudi listed firms (e.g., Al-Janadi et al., 2016; Al-Bassam et al., 2015), the Saudi stock market has witnessed several corporate accounting scandals in recent years (e.g., Mobily)[1] (Zerban, 2018). These accounting scandals have raised public awareness regarding the need for more credible and transparent financial disclosure and the necessity of further improvements in the existing governance regulations in the Saudi market (Algoere & Ali, 2019). Therefore, CMA responded to these issues by introducing a new Saudi corporate governance code in 2017, which replaced the previous corporate governance code issued in 2006 (Algoere & Ali, 2019; Rizvi & Hussain, 2022).

Following the emergence of several accounting scandals worldwide, the topic of corporate governance and earnings management practices has attracted the attention of a significant number of authors and researchers, which manifested in the publication of numerous studies that examine the effectiveness of corporate governance mechanisms in constraining earnings management practices (Abdou et al., 2020; Feng & Huang, 2020; Al-Okaily et al., 2020; Saona et al., 2020; Wan Mohammad & Wasiuzzaman, 2019; Suyono & Farooque, 2018; Katmon & Farooque, 2017; Baatour et al., 2017; Sáenz González & García-Meca, 2014). This literature has been guided by agency theory, which suggests that the divergence of interests between shareholders (the principal) and the managers (the agent) in the public companies causes an agency problem (Jensen and Meckling, 1976). This agency problem stems from several inherent factors in the modern corporation, such as the separation between the management functions and ownership, expensive enforceable contracts, and the information asymmetry between insiders of the firms and shareholders (Hoque, 2006; Jensen and Meckling, 1976). These shortcomings in the agency relationship between managers and absentee owners might induce the managers to involve themselves in earnings management practices (Davidson et al., 2005). Managers might utilise the information asymmetry between insider and outside investors to hide the actual financial information of the firms (Healy & Wahlen, 1999), or they might exercise their discretion on the firms' earnings to meet their interests. For instance, managers might use earnings management practices to

[1] In 2014, Mobily, one of Saudi Arabia's largest telecommunication companies, was reported as a corrupt firm. The investigations conducted by CMA revealed that the company had recorded premature revenue from wholesale broadband leases and mobile promotional campaigns. Therefore, Mobily was required to restate 27 months of earnings, which reduced its profit by 1.76 billion riyals ($469 million) (Zerban, 2018).

increase the firm's reported earnings to obtain higher compensation value (Healy, 1985; Healy & Wahlen, 1999).

However, such opportunistic behaviours by the managers obviously contradict the company's primary objective, which is maximising the shareholders' wealth. Therefore, to mitigate the agency problem in the modern firms and to prevent opportunistic managerial behaviours, firms should employ an effective monitoring system such as corporate governance mechanisms (Hoque, 2006; Fama and Jensen, 1983; Haniffa and Hudaib, 2006; Bonazzi and Islam, 2007;.Peasnell et al., 2005; Abdul Rahman and Haneem Mohamed Ali, 2006). For instance, the presence of the board of directors in the firms as a form of governance mechanism is expected to provide effective monitoring of the managers' activities, the board of directors has oversight of the activities of the firm and is seen as the highest level of decision control systems in the company. Additionally, the board is responsible for monitoring the practices of the top management and overseeing the daily operation of the company (Fama and Jensen, 1983). In the same vein, the presence of the audit committee within the firm's governance system is expected to constrain earnings management practices (Be´dard et al., 2004; Saona et al., 2020; Sharma and Kuang, 2014), since the responsibilities of the audit committee include supervising the process of the financial reporting, evaluating the firm's internal control systems, and ensuring that the external auditor is capable of detecting any manipulation in the financial reporting (Felo et al., 2005; Klein, 2002). Hence, internal corporate governance mechanisms are expected to enhance the integrity and the reliability of the financial reporting process by establishing an effective control system that, in turn, will constrain the opportunistic behaviours of the managers (Katmon & Farooque, 2017; Feng & Huang, 2020; Lehmann, 2016).

Based on this theoretical view, a large and growing body of literature has investigated the effectiveness of corporate governance mechanisms on constraining earnings management practices (Abdou et al., 2020; Feng & Huang, 2020; Al-Okaily et al., 2020; Saona et al., 2020; Wan Mohammad & Wasiuzzaman, 2019; Suyono & Farooque, 2018; Katmon & Farooque, 2017; Baatour et al., 2017; Sáenz González & García-Meca, 2014; Qamhan et al., 2018; Alshetwi, 2016). Although prior studies reveal competing views concerning the effectiveness of corporate governance in constraining earnings management practices, they generally provide supporting evidence for the constraining role of corporate governance on earnings management practices in both developed and emerging markets.

The majority of prior studies in the literature examine the influence of corporate governance mechanisms on earnings management practices by using either the individual corporate governance mechanisms such as board independence, board size, audit independence, and board meetings (Sáenz González & García-Meca, 2014; Rahman & Ali, 2006; Jamaludin et al., 2015; Peasnell et al., 2005; Saona et al., 2020) or by using corporate governance indices to proxy for the corporate governance mechanisms in the companies (Larcker et al., 2007; Bowen et al., 2008; Lehmann, 2016). However, limited studies combine the two approaches (e.g., Elghuweel et al., 2016; Feng & Huang, 2020). Prior studies have used different approaches to proxy for corporate governance mechanisms due to the absence of a unifying theory in the corporate governance literature that guides researchers in constructing corporate governance measures (Al-Najjar & Al-Najjar, 2017; Baker & Anderson, 2010b; Scholtz & Smit, 2015; Brown et al., 2011). Nevertheless, there is no one approach that is superior to the other since both approaches have deficiencies and strengths (Brown et al., 2011; Schnyder, 2012; Baker & Anderson, 2010; Daines et al., 2010). For instance, individual corporate governance measures have limited ability to capture the multidimensional aspects of a corporate governance system (which might correlate with each other), and they cannot reflect on their own the overall quality of corporate governance in the companies (Bekiris and Doukakis, 2011; Brown et al., 2011; Larcker et al., 2007). Consequently, using individual corporate governance measures in the empirical analysis to proxy for a complex concept like corporate governance might induce the risk of correlated omitted variables bias (Larcker et al., 2007; Schnyder, 2012). Unlike individual corporate governance mechanisms, corporate governance indices are broader in the scope as they incorporate several individual corporate governance measures into one index (Elghuweel et al., 2016; Agrawal and Knoeber, 1996; Pergola and Joseph, 2011). This, in turn, might make the governance index capture better the quality of the firms' governance mechanism than individual corporate governance characteristics do. However, despite this advantage of the governance index, computing the governance index might induce higher measurements error than computing individual corporate governance characteristics (Baker & Anderson, 2010; Daines et al., 2010). For instance, measuring a single governance characteristic such as a board's stock ownership involves recording one value leading to lower measurement error (Baker & Anderson, 2010). In contrast, the governance index has numerous provisions covering different governance aspects. Therefore, the probability of making mistakes in recording these values when computing the governance index score is higher than in a single governance characteristic (Baker & Anderson, 2010). Consequently, using such a governance proxy (i.e., governance index) that involves considerable governance measures might lead the statistical analysis to misspecify the relationship between corporate

governance and any economic outcome (Baker & Anderson, 2010). Hence, based on the discussion above, the inherent limitations in constructing corporate governance measures (i.e., single governance mechanisms or governance index) produce governance measures that suffer from low reliability and construct validity (Larcker et al., 2007; Black et al., 2017). Larcker et al. (2007) argue that such governance measures might explain the inconsistency of the results of studies that examine the association between corporate governance and various accounting and economic outcomes.

To overcome the inherent limitations of corporate governance measures, the current study seeks to extend and contribute to the existing literature by first investigating how corporate governance mechanisms influence earnings management practices, using both the compliance-index model (composite governance index is the main independent variable in the model) and the equilibrium-variable model (individual corporate governance characteristics are the main independent variables in the model). Employing both approaches in this study will help capture more precisely the quality of corporate governance in Saudi firms since each approach will offset the limitations of the other[2]. Therefore, the study's findings regarding the effect of corporate governance on earnings management practices will be more conclusive than the findings of prior studies that measure corporate governance by using either the individual corporate governance characteristics or governance index.

Second, the current study contributes to the literature that examine the association between board independence and earnings management practices by developing a comprehensive measure to proxy for strict board independence. The measure contains 11 formal independence criteria extracted from the 2017 Saudi Corporate Governance Code to evaluate the independence of each declared independent director on the board and audit committee of Saudi firms. By using this measure for board and audit independence, this study addresses the limitations of previous studies that used the percentage of independent directors on the board as a proxy for board independence (e.g., Park and Shin, 2004; Peasnell et al., 2005; Saona et al., 2020; Suyono and Farooque, 2018). These studies could be criticised for not considering the quality of the directors' independence when computing the ratio of the independent directors on the board (Crespí-Cladera and Pascual-Fuster, 2014; García-Meca and Sánchez-Ballesta, 2009). Accordingly, their findings regarding the effectiveness of the independent directors in constraining earnings management practices might be questionable.

[2] Please see section 2.2.1 in the literature review chapter and section 1.5 in this chapter for further discussion on this issue.

However, the developed measure in this study is expected to provide an accurate evaluation of the board independence in the Saudi firms. Therefore, by using this measure, this study is expected to provide accurate and reliable results regarding the effectiveness of board independence in constraining earnings management practices.

Third, this study contributes to the body of literature by examining the influence of family ownership on the association between corporate governance mechanisms (measured by using a comprehensive governance index) and earnings management practices in Saudi listed firms. According to the researcher's knowledge, no single study exists in the literature that examines the effectiveness of corporate governance in reducing earnings management practices in family firms by constructing a comprehensive governance index. Hence, this study is distinct from prior studies that only examined the effectiveness of individual corporate governance mechanisms (e.g., board independence and audit independence) in constraining earnings management practices in family firms (e.g., Prencipe and Bar-Yosef, 2011; Jaggi and Leung, 2007; Jaggi et al., 2009; Wan Mohammad and Wasiuzzaman, 2019). Therefore, the findings of this study are expected to be more convincing since the corporate governance index will be better able to capture the quality of the governance mechanism in the firms than the individual corporate governance characteristics. Therefore, the conclusion of the current study regarding the effectiveness of corporate governance in family firms will not be limited to specific components of corporate governance, such as audit committee characteristics or board composition (Bekiris and Doukakis, 2011).

In the Saudi context, this study makes a number of distinctive contributions. (i) unlike prior Saudi studies that examine the effect of the limited number of individual corporate governance characteristics on earnings management practices(e.g., Alshetwi, 2018; Baatour et al., 2017; Al Nasser, 2021; Habbash, 2012), this study extends these studies by examining the effect of seven individual corporate governance mechanisms (i.e., strict board independent, strict audit committee independent, board size, board meeting, audit meeting, multiple directorships and family members on the board) and four ownership types (i.e., government, institutional, family, and blockholders' ownership) on constraining earnings management practices in Saudi listed companies. Hence, this study can be considered broader in scope than previous Saudi studies. Additionally, it will help expand the current understanding regarding the effectiveness of these governance mechanisms in the Saudi context, which has institutional environments remarkably different from the US or UK.

(ii) Previous Saudi studies (e.g., Alshetwi, 2018; Baatour et al., 2017; Al Nasser, 2021; Al-thuneibat, 2016; Habbash, 2012) suffer from methodological deficiencies such as ignoring the endogeneity problem and employing a smaller sample size and shorter time scale. Therefore, this study overcomes these limitations by using the instrumental variable approach to address the possible endogeneity which may exist between internal governance mechanisms and earnings management. In addition, this study uses a larger sample size and longer time scale than prior Saudi studies. This, in turn, will allow the researcher to capture more precisely the effects of both cross-sectional and time-series changes in governance mechanisms on earnings management and improve the generalisation of the results (Omar & Simon, 2011; Ntim et al., 2012).

(iii) This study can be considered innovative in the Saudi context since it employs the largest self-constructed SCGI that contains 142 governance provisions. Additionally, this study will provide evidence for the first time on the level of compliance with the 2017 Saudi Corporate Governance Code achieved by Saudi firms.

In a sample of 112 Saudi listed firms from 2006-2017, first, the results of the compliance index model show a statistically significant and negative association between the SCGI and the level of earnings management practices. This implies that Saudi listed firms with better corporate governance standards tend to have lower earnings management practices. However, this result does not hold for firms with high family ownership since the results reveal that the effectiveness of corporate governance (measured by SCGI) in constraining earnings management is reduced in Saudi firms with high family ownership. In a series of sensitivity analyses, the evidence of the study is robust to (i) alternative earnings management models, (ii) endogeneity, and (iii) alternative proxy for the family control.

Second, regarding the equilibrium-variable model, the results indicate that Saudi firms are likely to have lower levels of earnings management if they have a large proportion of strict independent directors on the boards, larger board size, and their audit committees meet more often. Additionally, the results show that Saudi firms with higher government ownership, institutional ownership and family ownership have lower levels of earnings management practices. These results are moderately robust to (i) alternative earnings management models; (ii) endogeneity; and (iii) alternative proxy for strict board independence.

1.1 Research problem

During the past couple of decades, several giant public firms in the western world, such as Enron and WorldCom, have collapsed due to their involvement in fraudulent financial reporting (Ravisankar et al., 2011). Prior studies (Rahman et al., 2016; Persons, 2005; Hasnan et al., 2013) show that these aggressive accounting practices stem from earnings management practices. Similar to western firms, accounting scandals have made their way to the Saudi market in which several Saudi companies have engaged in aggressive accounting practices, resulting in CMA reporting them as corrupt firms (e.g., Mobily and Al-Mojil Group). In addition to these scandals, the Saudi market witnessed a serious market crisis in 2006, which resulted in the Saudi stock market losing about 50% of its market capitalisation at that time (Gerged & Agwili, 2020). These incidents have shaken investor's confidence in the Saudi capital market and raised the shareholders' and stakeholders' concerns regarding the quality of firms' governance mechanisms and the credibility of the financial information disclosed by the companies (Algoere & Ali, 2019).Thus, to restore the confidence of the stakeholders in the Saudi capital markets, Saudi regulatory bodies have reformed corporate governance rules by introducing the Saudi corporate governance code for the first time in 2006 and updating it comprehensively in 2017. The main aim of this reform was to address the factors that led to the Saudi market crash and the occurrence of accounting scandals in Saudi firms. These factors included the absence of solid governance regulations, weak legal framework, lack of accountability, weak investor protections, and lack of disclosure and transparency in the financial reporting of Saudi-listed firms (Bahrawe et al., 2016; Al Nasser, 2020; Al Otaibi, 2019).

Due to the importance of the new governance code to the Saudi market, this study is conducted to investigate whether the new governance code that put forward by CMA is effective in limiting the practices of earnings management, which was the leading cause of the accounting scandals in the Saudi firms (e.g., Mobily and Al-Mojil Group). Furthermore, the current study fills the gap and provides unique contribution to the Saudi governance literature by investigating the effectiveness of this new governance regulation in Saudi Arabia since, according to the researcher's knowledge, no single study provides evidence regarding the efficiency of the new governance regulations in constraining earnings management practices in the Saudi firms. Therefore, this study examines the efficiency of the new governance regulation by first analysing the relationship between the level of compliance of Saudi firms with the Saudi Corporate Governance Code (SCGC) and earnings

management practices by using a self-constructed corporate governance index (i.e., the compliance-index model), that derived mainly from the 2017 Saudi Corporate Governance Code. Second, this study examines the association between several individual corporate governance mechanisms (i.e., the equilibrium-variable model) and earnings management practices in Saudi-listed firms. Third, this study examines the influence of family ownership on the association between corporate governance mechanisms (measured by a comprehensive governance index) and earnings management practices in Saudi-listed firms. Finally, the findings of this study are expected to enhance the current understanding of investors, policymakers and regulatory bodies in Saudi Arabia, such as CMA, the Ministry of Commerce and Tadawul regarding the efficiency of the new governance regulations since this study provides an empirical assessment of the effectiveness of the 2017 Saudi Corporate Governance Code in constraining earnings management practices in Saudi firms.

1.2 Motivation of the Study

First ,the researcher is motivated to examine the governance practices in the Saudi context due to raised concern by shareholders regarding the quality of corporate governance practices in the Saudi firms after the collapse of the Al-Mojil Group in 2012 and the occurrence of the accounting scandal of Mobily in 2014 (Algoere & Ali, 2019). Regulatory bodies in Saudi Arabia have responded to this concern by reforming corporate governance regulations to strengthen corporate governance practices and increase the credibility and transparency of financial disclosure in Saudi firms (Al-Faryan, 2020). Specifically, CMA introduced a new Saudi corporate governance code in 2017, which replaced the previous corporate governance code issued in 2006 (Algoere & Ali, 2019; Rizvi & Hussain, 2022). According to the researcher's knowledge, there is no single study in the Saudi governance literature that investigate the effectiveness of this new governance regulation in Saudi Arabia. Thus, this study is motivated to fill this gap by examining the relationship between the level of compliance of Saudi firms with the Saudi Corporate Governance Code (SCGC) and earnings management practices using a self-constructed corporate governance index (i.e., the compliance-index model), that derived mainly from the 2017 Saudi Corporate Governance Code. In addition, this study provides evidence for the first time regarding the efficiency of the new independence criteria provided by the 2017 Saudi Corporate Governance Code to assess the quality of the independence of independent directors on the board of Saudi firms. It is worth mentioning that earnings management practices are selected

in this study to be the benchmark that demonstrates the strength and the quality of the corporate governance practices in Saudi firms because these practices were the leading cause of the collapse of the Al-Mojil Group (Zerban, 2018). Also, they were used by Mobily firm to manipulate its reported earnings (Zerban, 2018) .Thus, strong corporate governance mechanisms are expected to focus on constraining earnings management practices in the firms due to their negative consequences on the firms and their stakeholders (Abdou et al., 2020; Feng & Huang, 2020; Al-Okaily et al., 2020; Saona et al., 2020) .Hence, this study examines the quality of governance practices in Saudi Arabia from an earnings management perspective.

Second, the agency theory framework provides the theoretical motivation for the researcher to examine the effect of corporate governance mechanisms in limiting earnings management practices. Agency theory suggests divergence of interests and asymmetric information problems between shareholders (the principal) and the managers (the agent) in public companies, which causes an agency problem (Jensen and Meckling, 1976). Managers might utilise the information asymmetry between insiders and outsider investors to hide the actual financial information of the firms (Healy & Wahlen, 1999) or use earnings management to increase the firm's reported earnings to obtain higher compensation value (Healy, 1985; Healy & Wahlen, 1999). In order to mitigate the agency problem in public firms and to prevent opportunistic managerial behaviours, agency theory suggests employing an effective monitoring system such as corporate governance mechanisms in the firms (Hoque, 2006; Fama and Jensen, 1983; Haniffa and Hudaib, 2006; Bonazzi and Islam, 2007;.Peasnell et al., 2005; Abdul Rahman and Haneem Mohamed Ali, 2006). For instance, the presence of the board of directors in the firms as a form of governance mechanism is expected to monitor the managers' activities effectively. Since one of the primary responsibilities of the board is to monitor the practices of the top management and overseeing the company's daily operations (Fama and Jensen, 1983). In addition, Fama and Jensen (1983) suggest that the board of directors should include outside independent directors, which can increase the board of directors' effectiveness and decrease agency problems. Since independent directors do not have personal interests in the firms, thus, they are more willing to act in favour of shareholders' interests and provide effective monitoring (Agrawal & Chadra, 2005; Razali & Arshad, 2014; Shan et al., 2013).In the same vein, the presence of the audit committee within the firm's governance system is expected to constrain earnings management practices (Be´dard et al., 2004; Saona et al., 2020; Sharma and Kuang, 2014) since the main responsibilities of the audit committee are to supervise the process of the financial reporting, evaluate the firm's internal control systems, and ensure that the external auditor is capable

of detecting any manipulation in the financial reporting (Felo et al., 2005; Klein, 2002). Hence, internal corporate governance mechanisms are expected to enhance the integrity and the reliability of the financial reporting process by establishing an effective control system that, in turn, will constrain the opportunistic behaviours of the managers (Katmon & Farooque, 2017; Feng & Huang, 2020; Lehmann, 2016). Based on the above discussion, the current study examined the effect of corporate governance mechanisms on earnings management practices based on the agency theory perspective.

Third, this study investigates the effectiveness of the governance practices in constraining earnings management practises in the Saudi context for the following five reasons.

1. Saudi Arabia is an Islamic state where Islam is the country's official religion (Al-Faryan, 2020). The constitution of Saudi Arabia is the Holy Quran (a religious book that contains the words of God) and the Sunnah (the traditions, practices and sayings of the Prophet Muhammad; peace be upon him) (Al-Faryan, 2020). In Saudi Arabia, Islam extensively influences all aspects of Saudis' life (Al-Faryan, 2020).As a comprehensive religion, Islam has established sets of rules and regulations that should be adhered to by its followers (Sulphey, 2015). Islamic regulations come from the Shariah (Islamic law) that derives from the teaching of the Holy Quran and the Sunnah (Sulphey, 2015). The Shariah of Islam provides a comprehensive guideline for Muslims in all aspects of their lives, including politics, economics, religion, law, environment, business, banking and society (Sulphey, 2015; Abu-Tapanjeh, 2009). Accordingly, Shariah guidelines are not limited to religious rituals (Sulphey, 2015). Shariah recognises that Muslims certainly will involve themselves in secular material transactions in their life. However, Shariah emphasises that such dealings should be directed by the values of accountability, trustworthiness, equity, fairness, morality, responsibility, and social justice that are embedded in the Islamic principles (Albassam & Ntim, 2017). For example, Islam encourages Muslims to conduct their business in line with the Shariah rules that business practices should be ethical, fair, honest and just (Abu-Tapanjeh, 2009; Lewis, 2005). Therefore, Shariah rules prohibit all forms of manipulations and exploitation in business and prohibit business people from deceiving and exploiting others (Sulphey, 2015; Abu-Tapanjeh, 2009; Lewis, 2005). Additionally, Shariah rules prohibit practices like price-fixing, interest and monopolies to prevent the powerful group in the market from exploiting the others (Lewis, 2005). Furthermore, Islam is concerned about the social commitments of the business activities. Therefore, trading and investing should only be done in the

course of legitimate business operations. For example, activities like gambling are prohibited in Islam because they are detrimental to society (Lewis, 2005).Additionally, there are distinctive values in Islam such as accountability and trustworthiness (emanating mainly from the Shariah rules) that might positively impact the operations of the firms in Islamic countries. These Islamic values will be explained in detail as follows: Accountability is one of the fundamental ethical values in Islam that derive from the Quran and the Sunnah of Prophet Muhammad; peace be upon him. Islamic accountability means that humans are made accountable to God for all their deeds and words (Sulphey, 2015; Abu-Tapanjeh, 2009). In addition to the accountability to God Almighty, the accountability in Islam entails that humans are accountable to all parties that they might form contractual relationships with or have responsibilities toward, such as managers, employees, companies, local community, shareholders and environment (Sulphey, 2015; Lewis, 2005; Abu-Tapanjeh, 2009). The accountability in Islam was highlighted by Prophet Muhammad; peace be upon him, as he said, "Each one of you is a guardian, and each guardian is accountable to everything under his care" (Sahih al-Bukhari). Ahmed et al. (2013) and Abu-Tapanjeh (2009) argue that the concept of accountability in Islam is broader than its counterpart in the West, since the accountability in the Western corporate governance model might be limited to the board of directors, management, firms, stakeholders or the society, however, in Islam, accountability is not only limited to these certain groups, but the person is accountable first to God Almighty, the ultimate authority. Additionally, unlike the Western concept of accountability that holds the person accountable for their written and defined obligations only, accountability in Islam makes the individual accountable for all their oral pledges as well as all written, defined obligations (Ahmed et al., 2013). Accordingly, the concept of Islamic accountability might strengthen the effectiveness of the board of directors in performing their duties, as the directors of the board are holding themselves accountable to God Almighty in the first place, who monitors them in all times and places, in addition to their accountability to the shareholders and other firms' stakeholders. Furthermore, Abu-Tapanjeh (2009) and Sulphey (2015) state that firms guided by Islamic accountability are expected to produce accurate, fair, transparent and timely disclosure to all their stakeholders and provide accurate and correct information regarding their financial performance. Trustworthiness in Islam means that every person is a trustee of all the worldly wealth that belongs to God Almighty regardless of their position, so managers, shareholders, directors or any other stakeholders are entrusted with all the company's wealth (Sulphey, 2015;

Lewis, 2005). Hence, Muslims are expected to be honest, fair, truthful and responsible in fulfilling their obligations of being trustees of God's wealth (Lewis, 2005). In this regard, Quranic verses and Sunnah texts have exhorted Muslims to be trustworthy. For example, God says in the Holy Quran in Sura al-Anfal (8:27), "O you who believe! Betray not the trust of Allah and the Messenger, nor betray knowingly things entrusted to you.". Additionally, regarding the importance of trustworthiness in Islam, Prophet Muhammad, peace be upon him, said, "An honest and trustworthy merchant will be with the Prophets, the honest men and the martyrs on the Day of Judgment" (Sunan al-Tirmidhi). Therefore, by applying the concept of Islamic trustworthiness to the corporate context, it is expected that firms that follow Shariah rules and adopt the Islamic values in their operations might avoid earnings management practices because it is considered a form of manipulation and dishonesty that is prohibited in Islam, since Islam commands individuals to conduct business activities in a just, fair and honest manner and prohibits exploiting and deceiving people (Lewis, 2005; Abu-Tapanjeh, 2009). Therefore, Islamic firms entrusted with shareholders' wealth are expected to avoid engaging in earnings management practices as these practices might lead to exploiting shareholders' wealth.However, it is worth mentioning that there are significant similarities between the Islamic principles such as accountability, transparency, trustworthiness, equal distribution of wealth and commitment to the whole society and the governance standards. Abu-Tapanjeh (2009) argues that applying corporate governance practices might be equivalent to meeting several Islamic principles due to the similarities between the two concepts. Therefore, firms in Islamic countries are expected to adhere to governance practices because they correspond to the Islamic principles that Muslims are enthusiastic to meet because they are a part of their religious obligations (Abu-Tapanjeh, 2009). Albassam and Ntim (2017) empirically found that Saudi listed firms that incorporate Islamic values into their business operations produce higher corporate governance disclosure than firms that do not incorporate any Islamic values into their business operations. This finding indicated that Saudi firms that are guided by Islamic values in their operations have good governance quality, since these Islamic values have influenced the Saudi firms to increase their disclosure and transparency regarding their governance practices (Albassam & Ntim, 2017).Hence, it can be argued from the above discussions that Islamic regulations and values might influence the application of corporate governance mechanisms and earnings management practices in the firms. Therefore, the corporate governance mechanisms and the earnings management might be uniquely different in Saudi firms

from those in firms operating in developed/non-Islamic countries. Therefore, the effectiveness of corporate governance mechanisms in constraining earnings management practices in Saudi firms that are influenced by Islamic principles and values is a highly interesting topic of investigation, since Saudi firms might adopt several Islamic values that may work hand in hand with the governance mechanisms in reducing earnings management practices. Additionally, the motivations for applying good governance practices or avoiding earnings management in Saudi firms might be driven by religious factors, such as accountability to God Almighty and following Shariah rules in conducting honest, fair and just business, instead of being driven by secular factors such as legal liability, adherence to the regulations, or accountability to shareholders and other stakeholders. Therefore, the findings of this study are expected to shed light on the effectiveness of the corporate governance mechanisms on constraining earnings management practices in firms operating in solidly Islamic countries like Saudi Arabia.

2. Similar to the majority of Arab countries but distinct from most developed countries, Saudi Arabia is characterised by having a solid hierarchical social structure (Al-Twaijry et al., 2002; Haniffa & Hudaib, 2006), whereby the social ties between families and tribes are also solid in the society (Al-Bassam et al., 2015; Hussainey & Al-Nodel, 2008; Al Nasser, 2020). Since the family is a central pillar in Saudi society, this in turn impacts the ownership structure of the Saudi firms, in which the majority of Saudi listed companies have concentrated ownership mainly in the hands of families (Alhebri and Al-Duais, 2020). Therefore, in such a context, tribal, family and personal relationships might be given more importance and priority than formal corporate governance mechanisms such as board responsibilities in the Saudi firms (Hussainey & Al-Nodel, 2008; Al Nasser, 2020).However, the implications of the domination of families in the Saudi firms appear in the structure of the corporate boards. As mentioned in the chapter five, the board of directors of Saudi firms is dominated by family members. On average, 22.44% of the board directors in Saudi firms are family members. Furthermore, half of the Saudi firms (50%) have a family member who occupies the board's chairman position. One of the negative implications of the presence of family members on the board is that they can influence the process of electing and nominating the independent directors on the board (Jaggi et al., 2009; Al-Okaily et al., 2020) .As a result, independent directors of family firms are expected to be less objective and independent because their appointment and reappointments on the board might depend on the discretion of

controlling family members (Bao and Lewellyn, 2017). Additionally, the independent directors in family firms might have an implicit relationship with the controlling family members (Prencipe and Bar-Yosef, 2011). Such a relationship might increase the risk of collusion between the independent directors and controlling families in the firms (Prencipe and Bar-Yosef, 2011).Additionally, controlling families in the firms might tend to appoint their relatives as CEO or as board members (Anderson & Reeb, 2003). This implies that the individual's appointment in the family firms might not occur based on their qualifications or merit but instead on the informal and personal relationship with controlling families (Al-Bassam et al., 2015). Regarding the influence of the controlling families on the firms, prior studies show that the effectiveness of the corporate governance mechanisms is reduced in family-controlled firms (Prencipe and Bar-Yosef, 2011; Jaggi et al., 2009; Wan Mohammad and Wasiuzzaman, 2019). Therefore, based on the above discussion, this study is motivated to examine the effectiveness of the 2017 Saudi Corporate Governance Code in constraining earnings management practices in Saudi firms that are highly dominated by family members.

3. Saudi Arabia is one of the most important and largest economies in the world as it is part of the G20 (World Bank, 2021). The Gross Domestic Product (GDP) of Saudi Arabia was worth $700.12 billion in 2020, making it the world's 19th largest economy (World Bank, 2021). Furthermore, Saudi Arabia is the second-largest oil producer globally, and it holds around 17% of the world's oil reserves (OPEC, 2021). Therefore, Saudi's economy depends heavily on oil revenues as they account for 70% of the country's export earnings and around 50% of its GDP (OPEC,2021). Accordingly, to reduce the country's dependency on oil resources, Saudi Arabia in 2016 launched Saudi Vision 2030, which aims to increase non-oil international trade, increase the contribution of the private sector, diversify the Saudi economy, and make it a sustainable economy (Vision 2030, 2021). Additionally, in line with the Saudi vision, the Saudi government aims to diversify the funding sources for its government sector by encouraging the privatisation of state-owned firms through IPOs on the Saudi Stock Exchange (Vision 2030, 2021). This practice, in turn, is expected to increase the market capitalisation of the Saudi Stock Exchange (Vision 2030, 2021). Recently, the Saudi market has been included in the world's largest index providers such as MSCI, S&P Dow Jones and FTSE Russell (Inside 200 listed securities, 2021). This, in turn, has increased the contribution of foreign investors in the Saudi capital market as Saudi Stock Exchange has become accessible to

international investors (Inside 200 listed securities, 2021). It is worth mentioning that the Saudi stock market is the 9th largest stock market among the 67 members of the World Federation of Exchanges, and it accounts for 78% of the total market capitalisation of all MENA exchanges (Saudi Exchange, 2021). Additionally, the Saudi stock exchange is the largest in the Middle East (Saudi Exchange, 2021). Therefore, given the importance of the Saudi economy to the global economy and the importance of the Saudi capital market, it is crucial to examine the effectiveness of the corporate governance system in Saudi firms, since any failure in the governance mechanism in Saudi Arabia might lead to negative implications that extend beyond the Middle East and emerging markets. For instance, an ineffective corporate governance system in Saudi firms might result in losses to both local and foreign investors (Al-Bassam et al., 2015). Hence, the study is motivated to examine the effectiveness of corporate governance in constraining earnings management practices in the Saudi context.

4. The Saudi corporate governance regulations have witnessed remarkable reforms after the announcement of the Saudi Vision 2030 in 2016 (Alregab, 2021; Rizvi & Hussain, 2022). These reforms manifested in the release of novel corporate governance regulations by CMA (Algoere & Ali, 2019; Al-Faryan, 2020). In 2017, CMA introduced a new Saudi corporate governance code that replaced the previous corporate governance code issued in 2006 (Algoere & Ali, 2019). The purpose of introducing the new Saudi corporate governance code is to strengthen the governance practices of the Saudi companies, ensure uniformity of the local governance practices with international governance standards, promote accountability and transparency in the Saudi listed firms, attract foreign investors and boost the investors' confidence in the Saudi capital market (Rizvi & Hussain, 2022; Algoere & Ali, 2019; Alregab, 2021). Therefore, the current study is motivated to investigate the effectiveness of the new implemented corporate governance regulations in the Saudi listed firms. To achieve this aim, the study constructed a broad Saudi Corporate Governance Index (SCGI) that contains 142 corporate governance provisions extracted from the 2017 Saudi corporate governance code. The SCGI is used in this study to measure the compliance of the Saudi firms with the requirements of the 2017 Saudi corporate governance code. Furthermore, the study examines the effect of the compliance with the provisions of the 2017 Saudi corporate governance code on constraining earnings management practices in Saudi listed firms. Conducting this research will provide a clear picture of the effectiveness of the newly implemented governance practices in

the Saudi firms and will facilitate the evaluation of the efficiency of the new governance regulations in the Saudi context. Hence, the results of this study are expected to be of great benefit to policymakers and regulators as these results will demonstrate whether the current Saudi governance code has enhanced the governance practices in Saudi companies. In addition, the empirical results of this study might assist investors in making rational decisions regarding investment in the Saudi stock market.

5. Saudi Arabia is a developing country characterised by having (i) solid hierarchical social structure, (ii) concentrated ownership, (iii) lack of effective enforcement of governance practices, (iv) weak shareholder activism, (v) low level of foreign investors, (vi) weak market for managerial labour and corporate control, (vii) high influence of government and royal family in the stock market, and (viii) weak protection of the rights of minority shareholders (Al Nasser, 2020; Alhebri & Al-Duais, 2020; Al-Bassam et al., 2015; Al-Janadi et al., 2016; Habbash & Alghamdi, 2016). Accordingly, these factors mentioned above might induce managers of firms operating in developing countries to involve themselves in earnings management practices without the fear of being legally liable (Bao and Llewellyn, 2017; Ali et al., 2007; Chi et al., 2015). In this regard, Leuz et al. (2003) documented that earnings management practices are higher in developing countries that have concentrated ownership, weak investors' rights and ineffective regulations. Therefore, the contextual challenges embedded in developing countries like Saudi Arabia raise an important empirical question about the effectiveness of the governance mechanisms in constraining earnings management practices in Saudi listed firms. Hence, the current study aims to investigate the effectiveness of the 2017 Saudi governance code in improving the corporate governance standards in the Saudi context. The findings of this study are expected to provide new insights regarding the effectiveness of corporate governance practices in developing countries.

1.3 Research objectives

The main aim of this study is to examine the effect of corporate governance mechanisms on earnings management practices in the Saudi context. Five objectives are drawn from this main aim as follows:

First, this study intends to examine whether better-governed firms are associated with lower levels of earnings management practices. To achieve this aim, the researcher conducts SCGI to measure the compliance of the Saudi firms with the governance provisions provided in the 2017 SCGC. Then, the researcher studies the association between SCGI and earnings management practices in Saudi firms.

Second, this study attempts to ascertain how the board of directors' characteristics can explain the observable changes in firm-level earnings management practices. To achieve this aim, the researcher examines the effect of strict board independence, board size, board meetings, multiple directorships and the presence of family members on the board on earnings management practices in Saudi firms.

Third, this study examines the association between audit committee characteristics and earnings management practices. Hence, to achieve this aim, the researcher studies the effect of strict audit committee independence and audit committee meeting on earnings management practices in Saudi firms.

Fourth, this study attempts to ascertain whether ownership structures can explain the observed variability in the levels of earnings management practices. Hence, to achieve this aim, the researcher examines the effect of several types of ownership structures: government, institutional, family, and blockholders ownership, on constraining earnings management practices.

Finally, this study seeks to investigate the role of family ownership in the association between the level of compliance with Saudi governance provisions and earnings management practices.

1.4 Research Questions

Given the unique aspects of the Saudi corporate context discussed above (section 1.2), this study aims to investigate how a broad composite SCGI and other corporate governance variables can explain the observable changes in firm-level earnings management practices in Saudi firms. To achieve this aim, this study seeks to answer the following research questions:

1. What is the association between the level of compliance with the Saudi Corporate Governance Code (SCGI) and earnings management practices?

2. What is the association between the board of directors' characteristics and earnings management practices?

3. What is the association between audit committee characteristics and earnings management practices?

4. What is the association between ownership structures and earnings management practices?

5. What is the family ownership's effect on the association between firm-level corporate governance and earnings management practices?

1.5 Contributions of This Study

The current study aims to contribute to the literature that investigates the association between corporate governance mechanisms and earnings management practices in the international and Saudi contexts.

First, this study contributes to the literature by examining the influence of corporate governance practices on earnings management, using both the equilibrium-variable model (individual corporate governance characteristics as the main independent variables in the model) and the compliance-index model (a composite governance index as the main independent variable in the model). The majority of prior studies in the literature examine the influence of corporate governance on earnings management practices by using either the individual corporate governance characteristics (Sáenz González & García-Meca, 2014; Rahman & Ali, 2006; Jamaludin et al., 2015; Peasnell et al., 2005; Saona et al., 2020) or by using a corporate governance index as a proxy for the corporate governance system in the companies (Larcker et al., 2007; Bowen et al., 2008; Lehmann, 2016). However, there are limited studies that combine the two methods (e.g., Elghuweel et al., 2016; Feng & Huang, 2020). It is fundamental to the study results to examine the influence of corporate governance on earnings management by using both the individual corporate governance characteristics and the composite governance index. This is because both approaches have

deficiencies that can be eased if they are used jointly[3]. Hence, using both the equilibrium-variable model and the compliance-index model will help the researcher to capture more precisely the role of corporate governance in earnings management practices, since each approach will offset the limitations of the other.

Second, the study contributes to the literature by developing a measure to act as a proxy for strict board independence. This measure is used to evaluate the strict independence of each declared independent director on the board of directors /audit committee by using 11 formal independence criteria extracted from the 2017 Saudi Corporate Governance Code. Next, the study uses this measure to examine the impact of strict board/audit independence on constraining earnings management practices in Saudi listed firms. Therefore, this study differs from prior studies that examine the effectiveness of board independence on reducing earnings management practices by using the percentage of independent directors declared by the firms as a proxy for board independence (e.g., Park and Shin, 2004; Peasnell et al., 2005; Saona et al., 2020; Suyono and Farooque, 2018). These studies assume that the higher the proportion of independent directors on the board, the more the board is independent and effective in performing its monitoring tasks (Stockmans et al., 2013). These studies do not consider the quality of the directors' independence when they are computing the ratio of the independent directors (Crespí-Cladera and Pascual-Fuster, 2014; García-Meca and Sánchez-Ballesta, 2009). In this regard, Baker and Anderson (2011) argue that using the percentage of independent directors as a proxy for the board's independence might not be an accurate measure, since not all independent directors have a similar level of independence, as their independence might be negatively affected by other factors in the firms. Consequently, their effectiveness will be questionable too. Furthermore, it is not accurate to treat all the independent directors in the firms as a homogenous group in terms of their independence and effectiveness, since prior studies (Francis et al., 2012; Coles et al., 2014) find that not all independent directors are effective monitors. For example, Coles et al. (2014) examine whether the effectiveness of the monitoring differs between independent directors who are appointed by the CEO of the firms (co-opted by the CEO) and independent directors who are not appointed by the CEO (non-co-opted). In contrast to independent directors who are co-opted by the CEO, the study found that independent directors who are non-co-opted by the CEO (truly independent directors) are associated with a lower level of CEO pay, a higher sensitivity of CEO turnover to performance and lower investment. This result indicates that non-co-opted independent directors are more effective in monitoring the CEOs of the firm

[3] For further details for how using the equilibrium-variable model and the compliance-index model complement each other, please see section (2.2.1) in chapter two.

than independent directors who are co-opted by the CEO. Therefore, due to the variations in the level of the independent directors, and the inability of the traditional measure of board independence used in prior studies to capture these variations (Baker and Anderson, 2011), one should exercise caution in attempting to draw inferences regarding the effectiveness of board independence in reducing earnings management practices. Hence, based on the above discussion, it is recommended to construct an encompassing measure of board independence that distinguishes between independent directors with strong independence and those with weak independence. Therefore, the current study defines strict independent directors as those independent directors who meet all the 11 formal independence criteria recommended by the 2017 Saudi corporate governance code. Any independent directors who violate at least one of the 11 independence criteria will not be considered as strict independent directors and will be excluded from the measure of strict board independence. This measure is expected to function precisely as a proxy for the board independence of the Saudi firms. Additionally, by using this measure, the current study is expected to provide accurate results regarding the effectiveness of board independence in constraining earnings management practices. Accordingly, the study's findings show that strict board/audit independence is effective in reducing earnings management practices. In contrast, non-strict board/audit independence is not effective in reducing earnings management practices.

Third, this study contributes to the body of literature by examining the effect of firm-level corporate governance in constraining earnings management practices in the family firm. Firm-level corporate governance is measured by constructing a comprehensive governance index. Prior studies examined the effectiveness of corporate governance in family firms by using only the individual corporate governance characteristics, such as board independence and audit independence, as a proxy for the overall governance system (e.g., Prencipe and Bar-Yosef, 2011; Jaggi and Leung, 2007; Jaggi et al., 2009; Wan Mohammad and Wasiuzzaman, 2019) . According to the researcher’s knowledge, no single study exists which examines the effectiveness of corporate governance in reducing earnings management practices in family firms by constructing a comprehensive governance index.

Using a comprehensive governance index is fundamental to the study's results, since using individual corporate governance characteristics as a proxy for the overall governance system in the firms is subject to considerable criticism in the literature. For example, Agrawal and Knoeber (1996) argue that it is not an accurate practice to use individual corporate governance characteristics as a proxy for firm governance, since corporate governance mechanisms might interrelate with each other. Furthermore, Bekiris and Doukakis (2011)

and Jiang et al. (2008) state that single corporate governance measures cannot capture the multidimensional aspects of a corporate governance system. In the same vein, Brown et al. (2011) state that measuring only a single component of corporate governance characteristics (e.g., board independence) cannot reflect on its own the overall quality of corporate governance systems in the companies. Unlike using individual corporate governance characteristics, using a corporate governance index has several advantages. For instance, Pergola and Joseph (2011) state that using a corporate governance index that incorporates the assessment of various corporate governance mechanisms might offer reliable criteria for ranking the companies based on the strengths of their corporate governance systems. Moreover, proponents of the use of a corporate governance index for measuring corporate governance mechanisms in a company state that a governance index provides more convincing evidence regarding the effect of corporate governance factors on the quality of earnings than individual corporate governance characteristics (Jiang et al., 2008; F. Bekiris & Doukakis, 2011; Brown et al., 2011). This is because a corporate governance index is more comprehensive by virtue of incorporating several individual measures of the corporate governance system into one index. Additionally, such an index might account for the interrelation effect between different corporate governance mechanisms (Elghuweel et al., 2016; Agrawal and Knoeber, 1996). Hence, the current study will contribute to the existing literature by studying the influence of family ownership on the association between corporate governance mechanisms (measured by the comprehensive governance index) and earnings management practices in Saudi listed firms. The findings of this study are expected to be more convincing, since the corporate governance index will be better able to capture the quality of the governance mechanism in the firms. In addition, the conclusion of the current study regarding the effectiveness of corporate governance will not be limited to certain components of corporate governance, such as audit committee characteristics or board composition (Bekiris and Doukakis, 2011).

Fourth, the study contributes to the literature by using a self-constructed comprehensive corporate governance index that derives from Saudi governance regulations. Prior studies (e.g., Bekiris and Doukakis, 2011; Abbadi et al., 2016) could be criticised as adopting governance indices based on international governance codes and using such indices to measure the corporate governance quality for firms located in different countries. Such a practice is problematic because the governance index developed based on the international governance codes might not accommodate the governance arrangements needed for firms located in developing countries (Bhagat et al., 2008). Cuervo (2002), in his study, demonstrates that there are numerous differences between the corporate governance systems

of Anglo-American countries (developed countries) and the governance system in developing countries. Hence, different corporate governance arrangements are needed for companies in each of these systems (Bozec and Bozec, 2012). For example, in developing countries, due to the concentrated ownership and the possible influence of these controlling shareholders on the board of directors, Bozec and Bozec (2012) suggest that companies with controlling shareholders should focus on governance arrangements that ensure the independence of the board of directors from the controlling shareholders. However, companies with dispersed ownership structures, such as in developed countries, should focus on the independence of the board of directors from the management. Furthermore, the procedures used to monitor the management of firms operating in developed countries are different from those used in firms in developing countries. For example, effective monitoring of the managers in firms located in developed countries can be achieved through the risk of hostile takeover, independent boards, incentive payments, and a high level of disclosure and transparency (Schnyder, 2012). In contrast, due to the absence of the threat of hostile takeover, effective board independence, and a high level of disclosure and transparency in developing countries, monitoring of managers can be practised by larger shareholders (Schnyder, 2012). However, both combinations of governance arrangements might be equally effective, and all of them may provide effective monitoring of the managers (Bhagat et al., 2008).[4]

In addition, another reason for the inefficiency of using governance indexes developed based on international governance codes is that these governance regulations are designed based on what are considered good governance practices in developed countries; thus, they are not suitable for firms located in developing countries. For instance, Bhagat et al. (2008) argue that governance regulations in the US, such as the Sarbanes-Oxley act (SOX act), provide mandatory regulations which are suitable for firms operating in developed countries. For example, this regulation requires firms to have a majority of independent directors on their boards, as this is considered good governance practice for US firms. However, in developing countries, this practice might not be considered suitable for the firms because the board of

[4] It is worth mentioning that neither governance system is perfect, and each has some limitations (Cuervo, 2002). For example, in developed countries, the market for corporate control is expensive, and it requires a huge deviation from what is considered as acceptable behaviours of the managers in order to function appropriately (Cuervo, 2002). Another limitation of this mechanism is that firms might adopt anti-takeover defences that aim to protect the managers (Jensen, 1993). However, in developing countries, monitoring by large shareholders might be limited since large shareholders might pursue their personal interests at the cost of minority shareholders (Claessens and Fan, 2002; Shleifer & Vishny, 1997).

directors usually is not effective in developing countries, due to several factors such as the presence of effective monitoring by large shareholders, which might reduce the need for independent directors in monitoring the managerial practices (the substitution effect, e.g., Rediker & Seth,1995). Additionally, the board of directors in developing countries might not be effective, as they are controlled by large shareholders (Jaggi et al., 2009; Abu Siam et al., 2018; Jaggi and Leung, 2007). Consequently, the SOX requirements for majority independent directors on the board might not be considered good and relevant governance practices in firms operating in developing countries, since what matters the most in these firms is not the number of independent directors on the board but to what extent those independent directors are independent from controlling shareholders (Bozec and Bozec, 2012). Therefore, using the indices constructed in developed countries to evaluate the governance quality of firms in developing countries might harm the internal validity of the governance indices (Bozec and Bozec, 2012). Two factors explain the inefficiency of these governance indices. First, such a governance index will rank the firms by how closely their governance practices adhere to what the regulations define as good governance practices rather than by whether these governance practices are suitable to the firms or not (Bhagat et al., 2008). Second, these indices might give more weight to governance arrangements that are not relevant to firms operating in developing countries, such as takeover defences or monitoring by the board of directors (Bebchuk & Hamdani, 2009). Hence, Bhagat et al. (2008), in this regard, state that the most efficient corporate governance measure is the measure that depends on the context of the firms and accommodates the firms' specific circumstances and governance arrangements. Hence, Bhagat et al. (2008) recommended measuring corporate governance mechanisms by constructing a governance index that accommodates the firms' specific circumstances and their governance needs.

Therefore, to address the limitations of prior studies that used governance indices developed based on international governance codes (e.g., Bekiris and Doukakis, 2011; Abbadi et al., 2016), the current study uses a self-constructed corporate governance index derived mainly from the 2017 Saudi Corporate Governance Code. This index might be considered broad in scope and applicable to the Saudi context since it is derived from Saudi governance regulations. In this regard, Black et al. (2017) empirically found that constructing a governance index by using country-specific governance elements leads to an increase in the construct validity of the governance index. This is because these country-specific governance elements reflect the local norms, institutions, and data availability of the governance arrangements in the company. Furthermore, constructing a governance index based on the local governance regulations means that the governance index will incorporate

governance provisions that deal with the required governance arrangements that should be available in the firms. For example, the highly concentrated ownership found in Saudi Arabian listed companies might create the conditions of a new agency problem (agency problem type II), where there is a conflict of interest between majority and minority shareholders (Aguilera et al., 2012). Aguilera and Desender (2012) argue that, due to the possible existence of a different agency problem, the governance index should contain governance provisions that deal with the specific type of agency problem. Otherwise, the governance index would suffer from major limitations. Hence, listed companies in Saudi Arabia require governance arrangements that solve the agency problem found in these companies (agency problem type II). The 2017 Saudi governance code developed by the Capital Market Authority in Saudi Arabia has introduced specific corporate governance provisions to solve the type II agency problem.

The 2017 Saudi corporate governance code requires specific terms of independence to be met by the independent directors. For instance, it requires that (i) independent directors shall not own 5% or more of the company's shares, (ii) in order to prevent possible collusion between the independent directors and the majority shareholders in the companies, the independent directors shall not have a blood relationship with shareholders who own 5% or more of the shares of the company, and (iii) the independent directors shall not have a blood relationship with any of the other independent directors and executives of the company. The focus on the blood relationship in these requirements stems from the fact that Saudi listed companies have concentrated ownership mainly in the hands of families (Alhebri and Al-Duais, 2020).

These requirements are in line with the Bozec and Bozec's (2012) suggestions that companies with controlling shareholders should focus on governance arrangements that ensure the independence of the board of directors from the controlling shareholders in companies. These terms of independence, which are required for independent directors, will be placed in the current study index (provisions no. 7-17) in order to check the independence of the independent directors of Saudi companies. In addition, in order to protect minority shareholders' interests, the Saudi corporate governance code (2017) focuses on increasing the disclosure and transparency of the company. For example, the Saudi code requires the board to disclose the procedures adopted to inform its members of suggestions and notes provided by the shareholders about the performance of the company. In addition, the dividends policy and related party transactions should be disclosed in the annual reports of the companies. These requirements are transferred in the form of governance provisions in

this study's governance index (provisions no. 80, 100 and 102 respectively). Hence, the Saudi corporate governance index used in this study will be relevant for assessing the corporate governance system in the Saudi listed companies, since it covers the governance provisions designed to solve the specific type of agency problem that exists in developing countries like Saudi Arabia.

There are a limited number of Saudi studies that examine the effect of corporate governance mechanisms on earnings management practices (e.g., Alshetwi, 2018; Baatour et al., 2017; Al Nasser, 2021; Al-thuneibat, 2016; Habbash, 2012). These studies can be classified into two groups. The first group consists of studies that examine the effect of the several individual corporate governance characteristics on constraining earnings management practices (e.g., Alshetwi, 2018; Baatour et al., 2017; Al Nasser, 2021; Habbash, 2012). The second group includes studies that test the effect of corporate governance mechanisms on earnings management practices by constructing a governance index (e.g.,Al-thuneibat, 2016).The current study extends and contributes to all Saudi studies in both groups.

Regarding the Saudi studies in the first group, reviewing these studies shows that they have mainly focused on examining the effect of board and audit committee characteristics on constraining earnings management practices. These studies, in general, suggest that better-governed firms tend to have lower earnings management practices than their poorly governed counterparts (e.g., Alshetwi, 2018; Baatour et al., 2017; Al Nasser, 2021; Al-thuneibat, 2016; Habbash, 2012). Nevertheless, these studies suffer from several limitations. First, these studies examine the effect of the relatively limited number of corporate governance factors on earnings management practices. For instance, Alshetwi (2018) and Baatour et al. (2017) examine the effect of only one corporate governance mechanism in relation to earnings management practices. Baatour et al. (2017) examine the effectiveness of multiple directorships on reducing accrual-based earnings management and real earnings management practices. Alshetwi (2018) examines the effect of board independence on constraining earnings management practices. Furthermore, according to the researcher's knowledge, there is no single Saudi study in the literature investigating the effect of ownership structures on earnings management practices. Second, prior Saudi studies used a small sample size and a short time scale, covering only one or five years. For instances, Al Nasser (2021) used a sample of 97 Saudi listed firms during the period from 2009-2013, and Al-thuneibat (2016) used a sample of 90 Saudi listed companies for the year 2011. Consequently, using such a small sample size and short time scale in the analysis may negatively impact the generalisability of the findings of these studies for all Saudi listed

companies. Third, prior Saudi studies did not attempt to address the endogeneity problem in their researches. Therefore, their results regarding the effect of corporate governance mechanisms on earnings management might not be accurate, since the endogeneity problem affects the estimates of the parameters of the OLS model and renders them biased and inconsistent (Heij et al., 2004).

Hence, to address the above-mentioned limitations, the current study extends the previous Saudi studies in several ways. First, this study examines the effect of seven individual governance characteristics and four ownership types on constraining earnings management practices in Saudi listed companies. The governance characteristics examined in this study are strict board independence, strict audit committee independence, board size, board meeting, audit meeting, multiple directorships and family members on the board. Accordingly, this study can be considered broader in scope than previous Saudi studies, which examine the effect of a limited number of corporate governance factors on earnings management practices (e.g., Alshetwi, 2018; Baatour et al., 2017; Al Nasser, 2021; Al-thuneibat, 2016; Habbash, 2012) .

This study is the first study that examines the effect of several types of ownership structure which are government, institutional, family, and blockholders ownership on constraining earnings management practise using Saudi data. Thus, this study provides new evidence regarding the effectiveness of these several types of ownership in the Saudi context, which has institutional environments remarkably different from the US or UK[5]. Second, the current study has a larger sample size and longer time scale than prior Saudi studies (e.g., Alshetwi, 2018; Baatour et al., 2017; Al Nasser, 2021; Al-thuneibat, 2016; Habbash, 2012), since all listed companies (except firms belonging to the financial and insurance industries) from the years 2006 to 2017 have been included in the study's sample. Therefore, the study sample consists of 112 Saudi listed firms for a total of 994 firm-year observations. Such a large sample size will improve the generalisability of the results for all Saudi listed companies because all the firms, which have different sizes, will be included in the sample, thus helping to avoid the sample selection bias (Omar & Simon, 2011). Third, unlike prior Saudi studies that ignore the endogeneity problem, this study addresses the endogeneity problem in this research by applying two-stage least squares (G2SLS) regression and uses the instrumental variable for the compliance index model. The researcher has constructed an instrument for the Compliance-Index Model because the Saudi corporate governance index (SCGI) is the

[5] Please see section 1.2 for detailed explanation of the uniqueness of the Saudi context.

main interest of this study. Furthermore, the study accounts for any possible endogeneity in the equilibrium-variable model (EVM) by regressing the lagged values of the independent variables on the dependent variable in the model. Accordingly, the results of the study were constant after controlling for the endogeneity problem. Hence, the evidence provided in this study regarding the effect of corporate governance mechanisms on earnings management practices in Saudi listed firms is reliable and unbiased.

Regarding the Saudi studies in the second group, Al-thuneibat's (2016) study is the only study in the literature that examines the effect of corporate governance mechanism on earnings management practices by constructing a governance index. Al-thuneibat (2016) examines the effect of the compliance of Saudi listed companies with corporate governance requirements regarding the internal audit, board of directors and audit committee on reducing earnings management practices. The study used a questionnaire-based governance index that consisted of 54 questions to collect data from financial managers and internal auditors related to the compliance of 90 Saudi listed companies for the year 2011. However, this study could be criticised for using a small sample size (only 90 companies) and covering only one year. Additionally, the study did not cover compliance with other important corporate governance requirements, such as the disclosure and transparency section in the Saudi corporate governance code. Moreover, this study may not accurately measure the extent of the compliance of the corporate governance mechanism for Saudi firms because its measure of compliance is based on the perception of financial managers and internal auditors of the companies, which may involve considerable subjective judgment. This view is supported by Bozec & Bozec (2012), who criticise questionnaire-based indices of corporate governance as involving a great deal of bias since companies tend to provide inaccurate information about their compliance. Bozec & Bozec (2012) argue that companies might overestimate the quality of their corporate governance, or they may not acknowledge the deficiencies in their corporate governance system. Such practices might make the measure of corporate governance quality subject to respondents' bias (Klapper & Love, 2002). Therefore, a better way to capture compliance would be to collect the governance information from the companies' annual reports.

The current study uses a self-constructed corporate governance index, which is distinct from Al-thuneibat's (2016) study and depends on the disclosure of corporate governance information in the companies' annual reports for the collection of governance data. Unlike the use of a questionnaire-based index, in which the corporate governance data are collected from the respondents, collecting corporate governance disclosure data from annual reports

gives a higher degree of objectivity because the research measures the quality and compliance of corporate governance based on the disclosure of governance information in the annual reports, without any subjective interference from the researcher or the respondents (Florou & Galarniotis, 2007). Furthermore, the current study extends Al-thuneibat's (2016) study by constructing an SCGI that contains 142 corporate governance provisions covering five broad aspects (sub-indices), namely (i) The Board of Directors; (ii) Board Sub-Committees; (iii) The Disclosure and Transparency; (iv) The Internal Control; (v) The Rights of Shareholders; and (vi) The Implementation of Corporate Governance. Accordingly, the current study provides a more comprehensive picture of the level of compliance of Saudi companies with the 2017 Saudi corporate governance code, because the majority of the governance requirements set out in this code have been added to the index in the form of governance provisions. In addition to the 2017 Saudi corporate governance code, the study derives some of the SCGI provisions from the 2016 Listing Rules issued by the Capital Markets Authority of Saudi Arabia (CMA) and the 2015 Companies Act issued by the Ministry of Commerce in Saudi Arabia. However, since the SCGI has 142 governance provisions, this is considered the largest governance index currently employed in Saudi studies, which might open up new avenues for future research.

Furthermore, the study makes other contributions to the existing Saudi studies. For instance, the Saudi corporate governance code (used in constructing the SCGI in this study) is primarily derived from the UK governance code (Al-Bassam et al., 2015), and adopts the UK's 'comply or explain' style (Al-Bassam et al., 2015). However, prior studies indicate that there are institutional differences between Saudi Arabia and the UK in terms of the legal system, accounting standards, the effectiveness of the governance system, and cultural practices (Al-Bassam et al., 2015; Haniffa & Hudaib, 2006)[6]. Hence, this study contributes to the existing literature by providing evidence regarding the effectiveness of adopting the UK-style governance regime in Saudi Arabia. Overall, the findings suggest that well-governed firms (firms that have a high score in complying with Saudi corporate governance provisions as measured by SCGI) perform better than poorly-governed firms in reducing earnings management practices.

[6] Please see section 1.2 for detailed explanation of how the Saudi context is different from US and UK context.

1.6 Organisation of the Thesis

This thesis is organised into six chapters to investigate the effect of corporate governance mechanisms on earnings management practices in Saudi-listed firms. The purpose of the first chapter is to discuss the research problem of the study, present the study's primary motivations, articulate the research objectives, present the research questions and discuss the study's contribution. The chapter concludes with a concise summary of how this thesis is structured

Chapter two reviews the theoretical and empirical literature on the relationship between corporate governance mechanisms and earnings management practices. This chapter commences by discussing the underlying theories, which are the signalling theory, stewardship theory and agency theory, that explain the impact of corporate governance on earnings management practices. Following this discussion, this chapter presents the reasons behind selecting agency theory as the main theory for this research. Also, chapter two reviews the literature on the associations between corporate governance mechanisms and earnings management practices to identify gaps that the current study could help to close.

Chapter three provides an in-depth discussion regarding the development of the 13 hypotheses in this study. Specifically, the chapter discussed the theoretical and empirical links that show the connection between corporate governance mechanisms and earnings management practices based on the agency theory perspective.

Chapter Four presents the research design, methodology and data used in this study. This chapter begins by discussing the research paradigms, research strategy and research approach and their applications within the study context. Then, this chapter discusses the sample selection criteria and the data sources of this research. Also, the chapter discusses the measurement of the variables used in the compliance-index model and the measurement of the variables used in the equilibrium-variable model. Specifically, chapter four discusses the most used earnings management models in the literature and discusses their limitations. Then the justifications for the earnings management model used in this study and the robustness tests applied are discussed in the chapter. Moreover, the chapter demonstrates the process of constructing SCGI and presents the findings of the reliability and validity tests conducted for SCGI.

Chapter Five reports and discusses the empirical results of this study. The chapter begins by presenting the descriptive statistics of the variables used in the regression analysis of this study. Then the chapter discusses the OLS assumptions to determine whether the OLS regression is an appropriate estimation method for the study's primary analysis. Additionally, chapter five discusses the results of the compliance-Index model that examines the relationship between SCGI and earnings management practices. Also, the chapter exhibits the findings of the equilibrium-variable model that examine the association between individual corporate governance variables and earnings management practices. Also,chapter five presents the results of the robustness tests and the findings of sensitivity analyses that confirmed that endogeneity does not seem to impact the findings of this study excessively.

Finally, Chapter Six discusses the conclusion of the study. Specifically, it provides a brief summary of the research. Then this chapter presents an overview of the findings obtained from the compliance-index model and the equilibrium-variable model used in this study to investigate the nexus between corporate governance mechanisms and earnings management practices. Furthermore, the chapter summarises the contributions of the research and highlights the implications and recommendations of the findings for Saudi policymakers and investors. The chapter concludes by demonstrating the study's limitations and offering suggestions for future studies.

CHAPTER TWO

Literature Review

2 Introduction

This research aims to examine the effect of corporate governance mechanism on earnings management practices in Saudi listed firms. To achieve this aim, this chapter commences by discussing the underlying theories, which are the signalling theory, stewardship theory and agency theory, that explain the impact of corporate governance on earnings management practices. Following this discussion, this chapter presents the reasons behind selecting agency theory as the main theory for this research . Then, this chapter reviews the theoretical and empirical studies that show the connection between corporate governance mechanisms and earnings management practices. The review of the studies helps in identifying gaps within the existing literature that the current study can help to close. This chapter is organised as follows: the theoretical framework of this research will be discussed in section 2.1. The literature relating to the effect of Corporate Governance Index and earnings management practices will be discussed in section 2.2.1. Then, the literature relating to the association between individual corporate governance variables and earnings management practices will be discussed in sections 2.2.2 to 2.2.12. Finally, section 2.2.13 will discuss and review empirical and theoretical studies related to the role of family ownership in the relationship between corporate governance and earnings management practices.

2.1 Theoretical Framework of the Research

The following subsections discuss the relevant theories that link the relationship between corporate governance mechanisms and earnings management practices. The theories that will be discussed are the signalling theory, the stewardship theory and the agency theory. These theories have been chosen to be reviewed because they clearly explain the relationship between corporate governance mechanisms and earnings management practices. Since this study adopts a single theoretical framework, the justifications for the chosen theory will be discussed in the section.

2.1.1 Signalling theory

Signalling theory was developed by Spence (1973) to explain the information asymmetry in the labour market. However, in the accounting and finance context, signalling theory suggests that information asymmetry might arise in a large publicly held firm due to the separations between the ownership and management in these firms (Kachouri & Jarboui, 2017 ;Gerard Sanders & Boivie, 2004). Managers are involved in the firm's day-to-day operations; thus, they have better information about the firms than shareholders or potential investors in the market(Williamson, 2007 ;Lorsch Jay W. & Young, 1990). Usually, managers are better informed about the quality of the monitoring system of the firms and the quality of the reported earnings than shareholders, where the latter mainly rely on the firms' financial reports to access this information and make their investment decisions (Biao Xie et al. ,2003) . Thus, the private information that managers have about the firms might give them a privileged perspective regarding the underlying quality of the firms (Connelly et al., 2011).

However, the presence of information asymmetry between management and shareholders in public firms might motivate managers to involve themselves in earnings management practices to serve their interests or hide the underlying performance of the firms (Richardson, 2000). This situation might, in turn, expand the information asymmetry problem for the shareholders of public firms and raise their concerns regarding the transparency and credibility of firms' financial information (Katmon & Farooque, 2017 ;Sun et al., 2010).

Signalling theory suggests resolving the problem of information asymmetry in public firms by disclosing high-quality information that signals the firms' intrinsic quality to outside investors (Katmon & Farooque, 2017 ;Gerard Sanders & Boivie, 2004).These practices, in

turn, will allow outside investors to differentiate firms of varying quality in the market (Harun et al., 2020 ;Certo et al., 2001). Hence, based on the signalling theory perspective, public firms can mitigate shareholders' concerns regarding the quality of financial information (i.e. the possibility that the firms are involved in earnings manipulation) by disclosing corporate governance practices to external users of financial statements (Certo et al., 2001 ;Katmon & Farooque, 2017). Since corporate governance practices are widely believed to be associated with enhancing the integrity and reliability of the firm's financial reporting (Katmon & Farooque, 2017; Feng & Huang, 2020; Lehmann, 2016). Therefore, according to signalling theory, by disclosing corporate governance practices, firms will signal to outside investors that their financial reports are credible and transparent (Ben Ahmed et al., 2020 ;Katmon & Farooque, 2017). For instance, the firms might disclose that they are establishing an audit committee to signal to the shareholders and potential investors that their financial reports are fairly presented and the earnings management practices are under control. Since it is well known in the market that the audit committee is an essential component of the governance system in terms of constraining earnings management practices (Saona et al. ,2020). Since the audit committee's role is to supervise the financial reporting process, evaluate the firm's internal control systems, and ensure that the external auditor can detect any manipulation in financial reporting (Felo et al., 2005; Klein, 2002). Likewise, the firms might disclose that their board is dominated by independent directors to signal to the shareholders that they have effective monitoring mechanisms, thereby indicating the transparency and the cordiality of the firms' financial information (Fama and Jensen ,1983 ;Ajinkya et al., 2005).In contrast, firms with poor governance practices are likely to increase the uncertainty of the shareholders regarding the quality of the financial reports of the firms (Certo et al., 2001).

Several studies in the governance literature (e.g., Abdou et al., 2020 ;Salem et al., 2021) have empirically confirmed the theoretical implications of the signalling theory discussed above. For instance, by relying on a multi-theoretical framework including the Signalling theory, Abdou et al. (2020) documented that Egyptian and British firms with a high proportion of independent directors tend to have lower levels of earnings management practices. This result confirms the signalling theory perspective, which implies that the presence of independent directors in firms works as a credible signal to the transparency of the firm's financial statements. Similar to Abdou's et al. (2020) study, Salem et al. (2021) used a multi-theoretical framework including signalling theory and found that banks with high-quality voluntary disclosure (i.e. including the disclosure of governance practices) are less likely to manipulate their earnings. According to Salem et al. (2021), this result is in line

with the signalling theory perspective suggesting that issuing high-quality voluntary disclosure by banks alleviates the problem of information asymmetry by signalling the credibility of the firm's financial information to the outside investors. This, in turn, will help improve the investors' ability to take their investment decisions in the capital markets.

To sum up, signalling theory provides a theoretical foundation that explains the impact of corporate governance on earnings management practices (Certo et al., 2001;Katmon & Farooque, 2017). Based on the signalling theory perspective, the firm's disclosure of corporate governance practices can act as a reliable signal to the quality of the firm's financial reporting. It can also mitigate shareholders' concerns regarding earnings management practices (Abdou et al., 2020 ;Salem et al., 2021).

2.1.2 Stewardship theory

Unlike agency theory, which assumes managerial opportunistic behaviours and conflicts of interest between managers and shareholders (Jensen and Meckling, 1976), stewardship theory suggests that managers should be trusted and considered good stewards of company resources (Davis et al., 1997). Stewardship theory assumes that managers are not motivated by their personal objectives and that their interests are aligned with the principles of the firms (Davis et al., 1997). However, this situation does not imply that managers do not have personal interests; stewardship theory in this regard suggests that the stewards/managers are aware of the conflict of interests between themselves and the principal. However, the stewards believe that their personal needs will be met by working to achieve the company's objectives. Therefore, the opportunistic behaviour of the steward is constrained "by the perception that the utility gained from pro-organisational behaviour is higher than the utility that can be gained through individualistic, self-serving behaviour" (Davis et al., 1997, p. 25). Furthermore, the stewardship theory argues that managers have non-financial incentives apart from their financial motivations, such as the need for achievement, obtaining respect from authority and gaining satisfaction in their work (Huse ,2007 ;Muth & Donaldson, 1998). Accordingly, these non-financial motives might alleviate their opportunistic behaviours in the firms (Pucheta-Martínez et al., 2016 ;Donaldson & Davis, 1991).

Since stewardship theory considers managers as responsible stewards, managers, in this case, might not use opportunistic earnings management practices to manipulate reporting earnings; instead, managers may manage earnings to communicate to the shareholders the

firms' private information related to the future cash flow or future profitability (Siregar and Utama ,2008 ;Subramanyam ,1996; Krishnan ,2003) .In this situation, the corporate board might not prevent earnings management practices since they consider them beneficial to the shareholders (Lin et al., 2016). Consequently, from the stewardship theory perspective, the role of the board, in this case, will shift from monitoring managerial practices to other roles, such as strategic role, which implies formulation and implementation of the corporate strategy and consulting role, which implies that board of directors guide the management in achieving the firms' objectives (Minichilli et al., 2009 ;Huse, 2007)

As mentioned above, stewardship theory rejects the opportunistic behaviour of managers. Therefore, this theory suggests that corporate governance structure should facilitate management empowerment in order to be effective (Davis et al., 1991). For example, Donaldson & Davis (1991) argue that CEOs collective performance will be more effective if corporate governance structure gives them high authority and discretion in the firms (e.g.in CEO duality position).In addition, stewardship theory values the inclusion of executive directors on the board due to their valuable experience and information about the company since they involve in the company's daily operations (Petrovic, 2008). In contrast, a board dominated by non-executive directors is viewed under stewardship theory as lacking informed decision-making (Petrovic, 2008). This is because non-executive directors usually are part-timers with other job obligations and allocate less time to the board. In addition, non-executive directors may experience difficulty accessing the firms' specific information, resulting in a low contribution to the corporate strategy process by outside directors (Petrovic, 2008).

In line with the above discussion, stewardship theory suggests that managers are responsible stewards; thus, there is no need to implement monitoring mechanisms in firms (Donaldson & Davis,1991;Kent et al., 2010). Accordingly, corporate governance mechanisms will induce earnings management practices since they are perceived as beneficial and informative to the shareholders. In this regard, Lin et al. (2016) found that good corporate governance practices induced managers in Chinese listed firms to engage in informative earnings management practices, leading to more transparent financial reporting. Hence, According to the fundamental thoughts of stewardship theory, the corporate governance mechanism will be associated positively with earnings management practices.

2.1.3 Agency Theory

In modern large corporations, agency theory suggests that the divergence of interests between agents (managers) and principals (shareholders) of the company causes the agency problem (Jensen and Meckling, 1976). This problem stems from several factors inherent in the modern corporation, such as the separation between management and ownership functions, expensive enforceable contracts, and information asymmetry[7] between insiders of the firm and shareholders (Hoque, 2006; Jensen and Meckling, 1976). These shortcomings in the agency relationship induce managers to engage in earnings management practices (Davidson et al., 2005). Managers might utilise the information asymmetry between insiders and outside investors to hide actual financial information on the firms (Healy and Wahlen, 1999); or they might exercise their discretion in reporting earnings in order to promote their own interests (Healy, 1985). For example, managers of a firm that adopts a compensation plan based on reported earnings might have an incentive to increase the firm's reported earnings to obtain higher compensation value (Healy, 1985).

However, to mitigate the opportunistic behaviour of managers and align their interests with the shareholders, agency theory recommends incurring three types of agency cost: monitoring cost, bonding cost and residual loss (Jensen and Meckling, 1976). Monitoring cost is the cost incurred by the principal in establishing a monitoring system to observe the agent's behaviour; for example, the cost of implementing a governance system in the company (e.g., board of directors) or the cost of appointing external auditors (Hoque, 2006). Bonding cost is the cost incurred by the agent and the principal to ensure that the agent will not take a decision that will harm the principal and that the latter will be compensated if the agent take such a decision against the principal's interests (Hill and Jones, 1992). For example, Adams (1994) reveals that managers may incur internal audit costs in order to confirm to the shareholders that they are performing their duties in a responsible manner. In this regard, Adams (1994) argues that it is in the best interest of managers to incur such a cost because it will help them to protect their compensations or salary from any reductions that the principal might make. On the other hand, the principal/shareholders may incur a bonding cost in order to motivate the agent to act in line with the principal's interests. This bonding cost might include setting a bonus incentive scheme or remuneration package in the company (Hoque, 2006).

[7] Information asymmetry occurs in an economic transaction when one party has an information advantage over other party or parties.

Despite these monitoring and bonding costs that are incurred to align the interests of the principal and the agent, the divergence of their interests will remain (Jensen and Meckling, 1976). Thus, any decrease in the principal's wealth due to the conflict of interests between principal and agent is called residual loss (Jensen and Meckling, 1976; Hill and Jones, 1992).

According to Ang et al. (2000), residual costs arise from the failure to establish effective monitoring activities by the principal. Residual costs may also arise as a result of the misapplication of the monitoring devices in practice. For example, as L. Donaldson and Davis (1991) point out, agency theory recommends establishing a board of directors as a monitoring device in order to mitigate managerial opportunism. The theory also assumes that in order for the board of directors' monitoring activities to be effective, the chairperson of the board should be independent of the executive management. However, in practice the CEO of the firms may serve as chairman of the board of directors. In this case, agency theory predicts that the interests of the principal will be discarded in favour of managers' interests. This view is supported by Williamson (2007), who indicates that when the CEO holds the position of chairman, he/she may entrench his/her control by appointing members who are more willing to act in line with management interests and so less likely to question managerial actions. Therefore, L Donaldson and Davis (1991) suggest that CEO duality may lead to opportunistic managerial behaviour and agency loss.

However, Rahman and Ali (2006), B. Xie et al. (2003) and Davidson Iii et al. (2004) considered earnings management practices as an agency cost (i.e. residual cost) because they lead to negative consequences for the shareholders, as earnings management practices are used by the managers in order to provide misleading information within the financial reports (Davidson Iii et al., 2004). Given this situation, users of the financial reports may be unable to make informed decisions based on this imperfect (misleading) information (Davidson Iii et al., 2004). B. Xie et al. (2003) state that inaccurate information caused by earnings management practices affects the ability of investors to make the right decision on buying, holding or selling their securities. Also, the capital market cannot estimate the accurate value of these securities if such information flows into the market. Several studies also confirm that earnings management practices may turn into fraudulent financial reporting, which will eventually affect shareholders wealth' (Rezaee, 2005; Rahman et al., 2016; Hasnan et al., 2013).

In order to mitigate the agency problem in modern firms and limit the opportunistic managerial behaviours that might lead to agency cost, agency theory recommends that the

firms employ an effective monitoring system, such as corporate governance (Hoque, 2006; Fama and Jensen, 1983; Haniffa and Hudaib, 2006; Bonazzi and Islam, 2007; Peasnell et al., 2005; Abdul Rahman and Haneem Mohamed Ali, 2006). From the agency theory perspective, a corporate governance mechanism might be an effective monitoring device that the firms can employ to limit the opportunistic behaviour of the agent and thus mitigate the agency problem (Hoque, 2006; Fama and Jensen, 1983; Haniffa and Hudaib, 2006; Bonazzi and Islam, 2007; Peasnell et al., 2005; Abdul Rahman and Haneem Mohamed Ali, 2006). This is because a corporate governance mechanism provides monitorship over management activities. For example, Fama and Jensen (1983) consider the board of directors as a highest level of decision control in the company, as it is founded for the purpose of monitoring the management's decision-making process. The board is also responsible for employing and firing managers as well as setting their remuneration packages. Fama and Jensen (1983) state that such a board will help in reducing the agency problem by ensuring proper separation between the process of issuing and implementing a decision and the process of monitoring it. According to agency theory, the board of directors should include outside independent directors, as this is believed to increase the effectiveness of the board of directors and decrease the agency problem (Fama and Jensen, 1983). In this regard, prior studies explain why outside directors may be effective actors in the board of directors. First, independent directors do not have personal interests in the firms. Thus, they are more willing to act in favour of shareholders' interests (Agrawal and Chadha, 2005; Razali and Arshad, 2014; Shan et al., 2013). Second, it is not in the interests of independent directors to hide accounting problems or fraudulent activities which may have been committed by management (Agrawal and Chadha, 2005), since independent directors may face serious damage to their reputation if such practices are uncovered in their companies (Abdullah et al., 2010). Such a development might also diminish their chances of serving on other companies' boards of directors (Fich and Shivdasani, 2007).

In addition, the presence of the audit committee within the firm's governance system is expected to constrain earnings management practices (Be´dard et al., 2004; Saona et al., 2020; Sharma and Kuang, 2014), since the responsibilities of the audit committee include supervising the process of financial reporting, evaluating the firm's internal control systems, and ensuring that the external auditor is capable of detecting any manipulation in the financial reporting (Felo et al., 2005; Klein, 2002). Hence, internal corporate governance mechanisms are expected to enhance the integrity and reliability of the financial reporting process by establishing an effective control system which, in turn, will constrain the

opportunistic behaviour of managers (Katmon and Farooque, 2017; Feng and Huang, 2020; Lehmann, 2016).

2.1.4 Theory selection

This study uses agency theory as a theoretical framework for this research instead of stewardship theory and signalling theory for the following reasons:

First, this study used agency theory as a theoretical foundation of this study because the theoretical thought of agency theory regarding the opportunistic behaviours of the managers and the assumption of the monitoring functions of governance mechanism in the firms is similar to those of 2017 SCGC regulations. More specifically, SCGC assumes the opportunistic behaviours of the managers, similar to agency theory. Thus, SCGC requires the majority of the directors on the board to be non-executive, that is, to provide better monitoring to the managers. In the same vein, the SCGC insists on separating the positions of chairman and CEO to ensure that the board is not controlled by the CEOs as well as enhancing the objectivity and the independence of the directors. Additionally, the Saudi governance code prohibited the inclusion of executive directors on the board sub-committees such as on audit committee and nomination and remuneration committee. Also, to ensure proper monitoring of managerial practices, the 2017 SCGC has introduced specific independence criteria to be met by the independent directors on the Saudi boards. Hence, it appears from these regulations that the 2017 SCGC assumed the opportunistic behaviours of the managers in the firms; thus, SCGC emphasises on increasing the monitoring and supervision of managers in the firms. However, this view contradicted the suppositions of the stewardship theory that assumed that managers are responsible and can be trusted as good stewards of company resources (Davis et al., 1997). Also, in contrast with the orientation of 2017 SCGC and agency theory regarding the monitoring function of the governance mechanisms in the firms, stewardship theory assumes that governance mechanisms such as the board of directors should be considered as an instrument to assist the managers in running the firms rather than supervising the managerial activities (Minichilli et al., 2009 ;Huse, 2007). Hence, based on the above discussion, this study does not use stewardship theory because it is not applicable to the context of this study since it contradicts the orientations of 2017 SCGC regarding the functions of governance mechanisms in the firms and the assumption of the opportunistic behaviours of the managers.

Second, the stewardship theory assumes that managers are the responsible steward and they will use earnings management to communicate to the shareholders the firms' private information related to the future cash flow or future profitability (Siregar and Utama ,2008 ; Subramanyam,1996 ; Krishnan,2003 ;Donaldson & Davis, 1991). This view is contradicted by the empirical studies that provide evidence, which indicates that managers use earnings management to increase their bonuses (Healy et al., 1987; Bergstresser & Philippon, 2006). This is because the performance of companies has been linked with managers' wealth in order to align their interests with the companies' owners. In this regard, Albrecht et al. (2004) argue that the presence of these rewards and incentives that based on the reported earnings in firms that adopt stewardship theory structure (i.e. adopting mechanisms that empower trustee managers without monitoring mechanisms) might provide high opportunities for the managers to commit fraud. In contrast, the presence of a rewards and incentives system that based on reported earnings in the firms that follow agency theory structure (i.e. adopting control mechanisms that limit the opportunities for managers to pursue their interests at the expense of the shareholders' interests) might provide low opportunities for managers to commit fraud. In the same vein, Choo and Tan (2007) argue that the corporate governance model that advocates stewardship theory may not be effective since board of directors that lacks independent directors might encourage managers to commit fraud. Due to the above criticisms of the stewardship theory perspective, it will not use as a theoretical foundation for this study.

Third, this study uses earnings management models to detect the opportunistic earnings management practices only (i.e., Modified Jones Model ,(1995) and the Kothari (2005) model). These models are in line with the agency theory perspective that assumes the managers behave opportunistically in pursuing their interests, which contradicts those of shareholders. (Jensen & Meckling, 1976). Thus, agency theory is adopted in this study. However, in order to test the Stewardship theory, the study needs to use an earnings management model that detects the informative earnings management practices that represent the responsible and trusted behaviours of the managers. Therefore, testing the stewardship theory is beyond the scope of this study. Future studies might apply earnings management models to measure the informative practices of earnings management and then examine the effect of governance mechanisms in inducing such practices. Hence, stewardship theory does not apply to this study since the study uses an earnings management model that measures opportunistic earnings management practices.

Fourth, since this study adopts an agency theory preceptive that assumes the opportunistic behaviours of the managers, the signalling theory will be discarded. This is because the signalling theory assumes that managers would disclose corporate governance practices to signal the quality of the firm's financial reporting and mitigate shareholders' concerns regarding earnings management practices (Abdou et al., 2020; Salem et al., 2021) . Based on the agency theory perspective adopted in this study, self-interested managers are not expected to provide a high level of governance disclosure to signal the reliability of the firm's financial reporting. In line with this argument, Samaha et al. (2012) found that listed Egyptian firms with duality positions have lower corporate governance disclosure than their counterparts with non-executive directors in the chairman positions. This empirical finding confirms that self-interested managers will not disclose the governance practices of the firms to reduce information asymmetry and to improve shareholders' confidence in the financial reports.

In conclusion, in light of the above discussion, this study adopts an agency theory framework to test hypothesised relationships between corporate governance mechanisms and the incidence of earnings management practices in the Saudi context. As discussed above, the agency theory is in line with the orientation of SCGC regarding the assumptions of managerial behaviours and the functions of governance mechanisms in the firms. Furthermore, agency theory provides interpretations of the managers' motivations to manipulate earnings and explains the need for corporate governance mechanisms. In this study, corporate governance mechanisms are supposed to perform the monitoring function in the firms; thus, they are examined as a tool to alleviate the agency conflict that results in earnings management practices. Hence, agency theory provides a valid theoretical framework for examining the hypothesised relationship between corporate governance mechanisms and earnings management practices.

2.2 corporate governance and earnings management

The following sections discuss theoretical and empirical studies that show the connection between corporate governance mechanisms and earnings management practices. The review of the studies helps in identifying gaps within the existing literature that the current study aims to close.

2.2.1 Corporate Governance Index

The vast majority of prior studies in the literature have examined the link between corporate governance and earnings management by using individual corporate governance characteristics such as board independence, board size, audit independence, and board meetings (Sáenz González & García-Meca, 2014; Rahman & Ali, 2006; Jamaludin et al., 2015; Peasnell et al., 2005; Saona et al., 2020). In the survey paper on the topic of corporate governance and earnings management, García-Meca, Emma (2009) indicated that these studies provided mixed results, in as much as some of them found that individual corporate governance had a negative relationship with earnings management practices, other studies documented a positive relationship, while another stream of studies found no significant relationship between the two factors. However, researchers have yet to reach a common conclusion, although some have concluded that there is a negative correlation between individual corporate governance factors and earnings management. For example, Sáenz González and García-Meca (2014) found that board meetings, board size and board independence have a negative relationship with the practices of earnings management. In contrast, Rahman and Ali (2006) examined the effectiveness of corporate governance structure in reducing earnings management practices among 97 Malaysian listed companies. The study found no significant relationship between the independence or competence of the board of directors and discretionary accrual (proxy of earnings management). Also, it was found that neither the separation of the roles of CEO and chairman nor the independence, competence and frequency of meetings of the audit committee has a significant effect on the reduction of earnings management practices. Jamaludin et al. (2015) found that the number of independent directors on the board leads to an increase in earnings management practices among government linked companies in Malaysia.

However, the use of individual corporate governance characteristics in examining the effect of corporate governance on earnings management has been subject to criticism in the literature. For example, Larcker et al. (2007) suggested an explanation for the mixed results

reported by prior studies that examined the association between individual characteristics of corporate governance and earnings management practices. They state that the inconsistency of the results might be attributed to the low reliability and construct validity of the corporate governance measures used in the empirical analysis. Larcker et al. (2007) added that the majority of studies in the literature use either arbitrary indices or a single indicator for the entire corporate governance mechanism in the companies. However, using a single indicator such as the percentage of independent directors on the board for measuring a complex construct such as board independence might account for the inconsistency of the coefficients of the regression documented in previous studies. Larcker and Richardson (2004) support Larcker et al.'s (2007) argument that each individual corporate governance measure is incapable of measuring by itself the entire structure of corporate governance mechanisms in the companies. Larcker and Richardson (2004) point out that firms establish many monitoring mechanisms to alleviate the agency problem inherent in public companies. Thus, examining the effect of individual corporate governance factors on earnings quality without considering the effect of alternative corporate governance mechanisms may produce an inadequate analysis of the determinants of earnings quality. In addition, Jiang et al. (2008) criticise previous studies that use individual corporate governance measures in examining the effect of corporate governance on earnings management practices, such as the size of the board, the auditor type and the composition of the audit committee. Jiang et al. (2008) in this regard argue that these single corporate governance measures represent a narrow scope of the whole corporate governance system in the companies, which has many dimensions. Similarly, F. Bekiris and Doukakis (2011) state that single corporate governance measures cannot capture the multidimensional aspects of a corporate governance system. In the same vein, Brown et al. (2011) state that measuring only a single component of corporate governance characteristics (e.g., board independence) cannot reflect on its own the overall quality of corporate governance systems in the companies.

Furthermore, other researches criticise studies that examine the effects of individual corporate governance characteristics, arguing that corporate governance mechanisms tend to interrelate with each other. Agrawal and Knoeber (1996) state that, because of the interdependence of corporate governance mechanisms, each corporate governance mechanism may depend on or complement each other in order to be effective. In addition, Agrawal and Knoeber (1996) argue that, since alternative corporate governance mechanisms exist, such as shareholdings of insiders, institutions, large blockholders, markets for corporate control and so on, there is a potential interdependence between them. This is because all of these corporate governance mechanisms provide monitoring of and incentives

to managers to act in line with shareholders' interests, which helps in reducing agency problems. Empirically, the study observed interdependencies between these corporate governance mechanisms. For example, Agrawal and Knoeber (1996) found that the market for corporate control is positively associated with insider shareholders. This might occur when the takeover specialist attempts to gain control of the firm in order to be able to replace managers whose performance is poor. In this situation the presence of many insider shareholders might help the market for corporate control in replacing poorly performing managers by making insiders less obstructive. Similarly, it was expected that the market for corporate control would be positively associated with the presence of outside members on the board, who are more likely to facilitate the takeover. Thus, these examples explain how each corporate governance mechanism interrelates with and depends on every other to be effective. Given this, Agrawal and Knoeber (1996) argue that the results of any regression that examines the effect of a single corporate governance mechanism on firm performance (or other outcome variable), without considering the interrelations effect between the other corporate governance mechanisms, might be spurious since it ignores the inherent interdependence between corporate governance mechanisms. . Hence, the interpretation of the effect of a single corporate governance mechanism in the regression might be misleading due to the interdependence between these alternative corporate governance mechanisms (Agrawal and Knoeber, 1996)

Likewise, recent empirical evidence also indicates that individual corporate governance measures tend to be interdependent with each other in order to be effective. For instance, Ntim et al. (2015) firstly found that board size is positively and significantly associated with firm value. Secondly, by utilising two-stage least squares, the study considered the interaction of alternative corporate governance mechanisms, namely non-executive directors, leverage, block ownership, and institutional ownership, with board size. The results showed that in the presence of these four alternative corporate governance mechanisms, the coefficient of the board size remained positive and significant in relations to firm value. For example, the result showed a positive correlation between board size and the percentage of non-executive directors on the board. Thus, the board size evaluation effect may depend on the composition of the board. In other words, a board with more non-executive directors will have higher valuation. Based on these findings. Ntim et al. (2015) suggest that future studies should consider alternative corporate governance mechanisms in their analysis in order to obtain more robust findings.

Hence, in response to these methodological criticisms that are inherent in studying the individual corporate governance mechanisms in the regression analysis, several studies used a corporate governance index to proxy for the corporate governance system in the companies. for example, Elghuweel et al. (2016) examined the association between corporate governance mechanisms and earnings management practices by constructing a comprehensive corporate governance index containing 72 governance provisions. Also, for the above reasons, Cho and Chun (2015) used a corporate governance index that combines various dimensions of corporate governance in addition to the single measures of corporate governance variables in order to better capture the role of corporate governance systems in the companies. Yet, Pergola and Joseph (2011) state that, even if previous studies found that individual corporate governance variables such as board independence or board composition had a monitoring role in the companies, future studies should consider examining sets of corporate governance mechanisms. Pergola and Joseph (2011) state that use of a corporate governance index that incorporates the assessment of various corporate governance mechanisms might offer reliable criteria for ranking the companies based on the strengths of their corporate governance systems. Moreover, proponents of the use of a corporate governance index for measuring corporate governance mechanisms in the company state that a governance index provides more convincing evidence regarding the effect of corporate governance mechanisms on the quality of earnings than using individual corporate governance characteristics (Jiang et al., 2008; F. Bekiris & Doukakis, 2011; Brown et al., 2011). This is because a corporate governance index will be more comprehensive by virtue of incorporating several individual measures of the corporate governance system into one index. Such an index might account for the interrelation effect between different corporate governance mechanisms (Elghuweel et al., 2016; Agrawal and Knoeber, 1996). Thus, the conclusion of the study regarding the effect of corporate governance on earnings management practices will not be limited to certain components of corporate governance such as audit committee characteristics or board composition (Bekiris & Doukakis, 2011).

Although the studies reviewed above call for measuring corporate governance mechanisms through the use of a corporate governance index, there are relatively few studies that examine the effect of corporate governance on earnings management practices through use of a broader measure of the corporate governance structure (i.e., a corporate governance index), compared to studies that use individual corporate governance mechanisms. The first attempt was made by Larcker et al. (2007), who sought to examine the effect of corporate governance on different accounting and economic outcomes, including abnormal accrual, accounting restatements, future accounting performance and future excess stock returns. The authors

identified their corporate governance measures based on a conventional structure of corporate governance indicators which involves board characteristics, compensation characteristics, anti-takeover provisions, ownership and capital structure. By applying exploratory principal component analysis (PCA), the study derived 14 separate indices for 39 individual corporate governance characteristics. The 14 indices are: Active, Block, Affiliated, Insider Appointed, Anti-Takeover I, Old Directors, Debt, Insider Power, Compensation Mix, Meetings, Lead Director, Board Size, Anti-Takeover II and Busy Directors. Larcker et al. (2007) argue that this approach will help in assigning a set of individual corporate governance characteristics in the relevant corporate governance indices. This, in turn, might result in the construction of corporate governance indices having plausible levels of construct validity and reliability.

With the exclusion of Active, Anti-Takeover I, Compensation Mix, and Lead Director, the authors computed the scores of the governance index by using the average equal-weighted sum of the standardised indicators associated with each factor. In addition, the factor scores for these four factors were computed as follows. The Active factor was computed as the sum of the standardised Activists (measured by the number of activist institutions holding shares) and Activists Own (measured by the fraction of outstanding shares held by activist institutions), less standardised Outsiders Own (measured by the fraction of outstanding shares held by the average outside director) divided by 3. The remaining three factors' scores were computed using respective standardised components as follows to reflect substitutability: Anti-Takeover I is the sum of Staggered Board (measured as indicator variable equal to 1 if the firm has a staggered board, and 0 otherwise) and Poison Pill (measured as indicator variable equal to 1 if the firm has adopted a poison pill, and 0 otherwise) minus Affiliated Own (measured as fraction of outstanding shares held by activist institution) divided by 3. Compensation Mix was measured by Accounting Mix (measured as fraction of total annual CEO compensation that is comprised of performance plans and annual bonus) minus Long Term Mix (measured by fraction of total annual CEO compensation that is comprised of performance plans, stock options and restricted stock grants) divided by 2. Finally, Lead Director is Lead Director (measured as indicator variable equal to 1 if there is a lead director on the board, and 0 otherwise) minus Insider Chairman (indicator variable equal to 1 if an executive holds the position of chairperson of the board and 0 otherwise) divided by 2.

In order to measure the reliability of its governance indices, the study used Cronbach's alpha[8], and reported that the mean of coefficient alpha is 0.532. However, Ho (2006) states that if the alpha is equal to 0.80 or higher, this indicates that all items in the index are reliable and the entire test is internally consistent[9]. Yet, the study acknowledged that its level of reliability (with coefficient alpha being 0.532) is lower than the benchmark suggested by Ho (2006), which is 0.80. However, the study argues that this low level of reliability is expected in the initial stage of developing a measurement tool.

In order to measure the effect of corporate governance on earnings management, the study utilised the logistic model. For measuring earnings management practices, the study used the Modified Jones Model proposed by Dechow et al. (1995). Nevertheless, the results showed that 5 out of 14 governance indices exhibited a significant relation at conventional level with earnings management practices. These indices are Active, Block, Compensation Mix, Insider Power, and Anti-Takeover II. In contrast to the study's prediction, Active and Block indices led to an increase in the practices of earnings management in the firms. Moreover, as the study predicted, Compensation Mix had a positive association with earnings management practices. Also, the study found that Anti-Takeover II factors (incorporating measures designed to decrease the market for corporate control power in disciplining companies) were associated positively with earnings management practices. Similarly, the Insider Power index was found to be positively associated with earnings management practices.

However, Jiang et al. (2008) criticise Larcker et al.'s (2007) study, stating that using 14 separate corporate governance indices might lead to the production of inconclusive evidence of the association between corporate governance and earnings management in Larcker et al.'s (2007) study. Thus, Jiang et al. (2008) suggest that using one composite measure of corporate governance structure might produce more conclusive evidence.

Yet, by using various methods to measure the level or the quality of corporate governance, studies found that a high level of corporate governance disclosure helps in constraining earnings management practices. For example, Bowen et al. (2008) examined the link between corporate governance quality and accounting discretion based on two hypothetical

[8]Cronbach's alpha is a "single correlation coefficient that is an estimate of the average of all the correlation coefficients of the items within a test" (Ho, 2006, p. 240).

[9]Internal consistency reflects the degree to which the items in the test measure the same concept (Allegrini & Greco, 2013).

views: the efficient contracting view and the managerial opportunism view. From the efficient contracting point of view, managers used their accounting discretion in an efficient manner, which in the long run will lead to maximum shareholders' value (Christie & Zimmerman, 1994). By contrast, managerial opportunism theory suggests that managers in general act on short-term self-interest incentives and take advantage of loopholes in the firms, such as poor corporate governance structures, to manage earnings in their own short-term interests. For instance, opportunistic managers might exploit the weak structure of governance in their companies and exercise their accounting discretion in order to meet or beat earnings benchmarks (Peasnell et al., 2000) or protect their bonuses (Holthausen et al., 1995). In other words, Bowen et al. (2008) define managerial opportunism in their study as unexpected managerial practices that lead to the transferral of shareholders' wealth to the managers, leading in turn to net loss in the overall wealth of the shareholders.

In order to measure the quality of a corporate governance structure, the study used the G-scores constructed by Gompers et al. (2003) (which measure the balance of power between shareholders and top executives). Gompers et al.'s (2003) G-scores contain 24 corporate governance provisions supplied by the Investors Responsibility Research Centre (IRRC) and provide takeover law data for four years: 1990, 1993, 1995, and 1998. Gompers et al. (2003) divided the 24 corporate governance provisions into five groups: tactics for delaying hostile bidders (Delay); voting rights (Voting); director/officer protection (Protection); other takeover defences (Other); and state laws (State). Then they calculated the G-index scores by which each company in the study sample would gain one point if it applied a provision that reduces shareholders' rights. Therefore, higher G scores mean less shareholders' power and highest management power (that is, a less well-governed company). In contrast, lower G scores indicate that shareholders have greater power and management has lowest power (that is, a better-governed company). In addition to G-scores, the study used individual corporate governance variables, namely, board monitoring, institutional ownership, and managerial ownership, as well as Incentive compensation: Bonus, Incentive compensation: Stock options, and Auditor expertise.

The managerial discretion in Bowen et al.'s (2008) study was measured by using an aggregate index of accounting discretion (composed of abnormal accrual, accrual-based smoothing of earnings, and the tendency to avoid negative earnings surprises). The results in the first stage are consistent with the managerial opportunism view in finding that firms with poor governance quality exercise more accounting discretion. Regarding individual corporate governance variables, the study found that companies with a high proportion of

the management team on the board of directors and more interlocked directors engage more in accounting discretion. However, the study found that board meetings are associated negatively with accounting discretion. Hence companies that have fewer meetings are more likely to participate in accounting discretion practices. Also, the study found that firms that grant their managers a greater proportion of their compensation in the form of bonuses are more likely to engage in accounting discretion practices. Finally, the study found that firms with high institutional ownership are more involved in accounting discretion practices.

Yet, several authors, such as Bekiris and Doukakis (2011) and Jiang et al. (2008), criticised Bowen et al.'s (2008) study because of its use of Gompers et al.'s (2003) G-score as the measure of corporate governance. The reason is that the G-score used in Bowen et al.'s (2008) study includes mainly anti-takeover provisions and does not cover other important aspects of corporate governance, such as ownership and board structure (Larcker et al., 2007). This is because the governance characteristics in the G index were obtained from IRRC, and according to Baker and Anderson (2010), clients of IRRC during the 1980s were active in corporate governance in order to resist takeover defences. Thus, the defensive techniques were the main governance features tracked by IRRC. In addition, Cremers and Nair (2005) argue that the G-score has been used in the literature as a corporate governance index, whereas in fact it is an anti-takeover protection index focusing on the external corporate governance dimension, and not a broad index of corporate governance that contains both internal and external dimensions of governance. Therefore, the interpretation of the coefficient of the G-score in the regression will be problematic, since it ignores important governance provisions that might measure other important dimensions of corporate governance (Larcker et al., 2007; Bebchuk et al., 2009).

By using the same governance measure as Bowen et al. (2008), namely the Gompers et al. (2003) G-score, Demirkan and Platt (2009) examined the effect of governance quality on the decision of managers to engage in earnings management practices. The study, which used a sample of US manufacturing firms between the years 2001 and 2003, did not find that high governance quality could reduce practices of earnings management. In the same vein, by using US data of 4311 companies for the years 2002-2004, Jiang et al. (2008) investigated the relationship between corporate governance and earnings quality, measured by the level of absolute discretionary accrual in the post Sarbanes-Oxley period. The study measured the level of corporate governance by using the measure developed by Brown and Caylor (2006a), referred to as Gov-Score. This index is broader than Gompers et al.'s (2003) G-score, which contains both external and internal governance provisions (Brown & Caylor,

2006). More specifically, the Gov-Score incorporates 51 governance provisions which span 8 categories: audit, board of directors, charter/bylaws, director education, executive and director compensation, ownership, progressive practices and state of incorporation. The results indicate that there is a significant negative relationship between the level of corporate governance and the absolute discretionary accrual. The study also investigates the incremental effect of different levels of corporate governance on earnings quality, by dividing the sample into strong, medium and weak corporate governance groups. It found that companies having strong corporate governance (high corporate governance score) demonstrate greater ability to reduce discretionary accrual compared to firms having weak or medium governance scores.

In the United Kingdom, Lehmann (2016) developed his own governance index: GOV_{ISS}. He intended to measure the quality of internal corporate governance. In detail, GOV was constructed as follows. First, the author measured the corporate governance score GOV_{ISS} based on Corporate Governance Quotient (CGQ) raw data between 2003 and 2007 and the latest Corporate Governance Quotient Indicator Definition published by ISS in 2007, provided by UK Institutional Shareholder Services (ISS). The UK GGQ rating contains 8 categories: board, audit, charter, anti-takeover provisions, compensation, progressive practice, executive ownership, and education. These categories have 47 individual rating criteria. Thus, based on GOV_{ISS}, each rating criterion is equally weighted, taking the value of 1, if the corporate governance standards of the company are acceptable (according to the CGQ indicator definition) and 0 otherwise. Second: the average value of company GOV_{ISS} is calculated to measure governance quality for the merger and acquisition sample from 1998 to 2011. The study aimed to examine the role of corporate governance in shaping the manipulation of accrual prior to share-based merger and acquisition (M&A) transactions. The study adopted the view that earnings management may be used in favour of shareholders' interests. Thus, the managers of the acquiring firms might manage earnings upwards prior to M&A in order to inflate the share price of the acquiring firms. As a consequence, their exchange ratios and target prices will be reduced. Based on this assumption, the study hypothesised that good corporate governance quality of the accruing firms may induce income increasing accrual manipulation prior to share-based merger and acquisition (M&A) transactions. The study documented that acquirer firms having a high value of company GOV_{ISS} (i.e., are well-governed) show more aggressive income increasing accrual manipulation than poorly governed firms.

Other studies in the literature depend on Ready-to-use analyst ratings in order to measure firms' level of corporate governance. For instance, Shen and Chih (2007) examined the effect of corporate governance on earning management practices in 9 Asian countries: Hong Kong, India, Indonesia, Korea, Malaysia, the Philippines, Singapore, Taiwan and Thailand. In order to measure each firm's level of corporate governance, the study used a survey based on the Credit Lyonnais Security Asia (CLSA) governance index, which ranked 495 companies in 25 emerging markets. The ranking of the companies followed 7 governance criteria, namely: management discipline, transparency, independence, accountability, responsibility, fairness and social awareness. According to Shen and Chih (2007), each of these categories contains from 6 to 10 criteria, with a total of 57 criteria. In order to measure the level of corporate governance, these 57 criteria were presented in questionnaire form. Afterwards, CLSA asked its analysts to cover the company and give a score of 0 or 1 as an answer to each question. To calculate the final score of each company, the scores of the answers to the questions in each category were summed to form a score and then scaled by the total number of questions in the corresponding category, in order to convert it to a percentage.

Nonetheless, the CLSA corporate governance index could be criticised for using the questionnaire method to evaluate the companies' corporate governance systems (Chen et al., 2003). This is because the assessments of corporate governance systems in the companies in the CLSA survey depends on the subjective assessments of the analysts who used their experience in evaluating the governance mechanisms of the companies. This in turn might render corporate governance quality subject to analyst's bias (Klapper & Love, 2002; Chen et al., 2003). Yet, despite this criticism, Chen et al. (2003) argue that this approach may have the advantage of measuring the actual practices of the company's corporate governance system, rather than measuring what the company disclosed about their corporate governance practices. In order to mitigate the possible bias in CLSA measurement, 70% of the questions posed by CLSA were designed to be based on facts, such as whether the board meets minimally four times per year (Chen et al., 2003). Yet, Shen and Chih's (2007) study measures earnings management practices involving earnings smoothing and earnings aggressiveness. The study found that firms having a high level of corporate governance ranking demonstrate fewer earnings management practices.

Unlike Shen and Chih's (2007) study, which uses Ready-to-use analyst ratings of governance, Shan's (2015) study developed its own corporate governance index to measure the quality of corporate governance in Chinese companies. The study constructs its own

index based on 8 corporate governance provisions, the effectiveness of which has been documented in prior studies conducted in the Chinese context. These provisions are: State ownership concentration, Foreign ownership concentration, Board size, Independent director, Supervisory board, Professional supervisor, Independence of audit committee, and Big 4 auditor. The authors argue that their measure of corporate governance quality gives their study an advantage in which its governance provisions gain support from previous literature. In addition, these governance provisions reflect most of the characteristics of the Chinese corporate governance system, which is based on a two-tier board system. The study was based on a sample of 1012 firms listed on the Shanghai SSE 180 and the Shenzhen SSE 100 from 2001 to 2005. The results indicated that companies that have high corporate governance quality are more likely to constrain the practices of earnings management.

On the other hand, Bekiris and Doukakis (2011) studied the effect of corporate governance on earnings management practices based on data of 427 firms listed on the Athens, Milan, and Madrid Stock Exchanges, in the year 2008. The study constructs its own corporate governance index, GGI, based on the UK Corporate Governance Code (formerly known as the Combined Code). The reason for choosing this Corporate Governance Code as the main source of their governance index is that it is considered the most influential governance code worldwide. Since the study measured the corporate governance quality of firms located in different markets, it was expected that there would be differences in the corporate governance codes and legal regulations of these markets. In turn, these institutional differences are difficult to take into account when constructing the corporate governance index. In addition to UK Corporate Governance Code, the corporate governance provisions in the index have been taken from other sources such as corporate governance rating firms (Risk Metrics, former ISS Proxy, and GMI Ratings) and Standard and Poor's disclosure and transparency index. Accordingly, the GGI contains 55 individual corporate governance measures organised in five dimensions, namely: board of directors, audit, remuneration, shareholder rights and transparency. In terms of the rating methodology, the study gives each provision equal weight, taking the value of 1 if the company discloses the provision, or 0 otherwise. The study documented that companies scoring high on the GGI are more likely to limit income increasing earnings management practices.

Nonetheless, Bekiris and Doukakis's (2011) study could be criticised for using a governance index based on the UK Corporate Governance Code and measuring the corporate governance quality of listed firms located in different countries. Such an index might lead to inaccurate results because it might not reflect the local governance arrangements required in the firms.

For example, according to Schnyder (2012), the effective monitoring of management in firms operating in the Anglo-American system can be achieved by the risk of hostile takeover, independent boards, incentive payments, and a high level of disclosure and transparency. In contrast, due to the absence of the threat of hostile takeover and high level of disclosure and transparency in the blockholders governance system, monitoring of managers can be practised by larger shareholders (Schnyder, 2012). Hence, using the corporate governance index developed in Anglo-American countries to measure the governance mechanism of firms operating in developing countries might lead to inaccurate results. This is because these indices might give more weight to governance arrangements that are not relevant to firms operating in developing countries, such as takeover defences or monitoring by the board of directors. (Bebchuk & Hamdani, 2009).

Abbadi et al. (2016) have measured the impact of corporate governance quality on earnings management practices using a governance index, namely the corporate governance index developed by Sawicki (2009). That index contains only 10 governance criteria, selected on the basis of prior studies. The authors modified the index in order to meet the requirements of the corporate governance practices for companies listed on the Amman stock exchange in Jordan. The corporate governance index is divided into four categories, namely, Board of directors, Board meetings, Audit, Nominations and Compensations committee. The study documented that companies scoring high on the governance index engage in fewer earnings management practices. In addition, the study examined the association between each individual corporate governance category and earnings management. The results indicated that each separate corporate governance category significantly reduced the practices of earnings management. More specifically, the study observed that the audit and board meetings categories had a greater effect on constraining earnings management practices than the remaining categories. These results imply that strong adoption of all standards in the corporate governance index categories increases the quality of financial reporting. The study also reported that over time the corporate governance quality increased, and its ability to constrain earnings management practices increased, too. Although the study measured corporate governance quality through an index containing several governance measures, Abbadi et al.'s (2016) study could be criticised for using Sawicki's (2009) governance index. This is because that index evaluates the quality of the company’s corporate governance based on 10 criteria only, which might not give accurate results.Thus, Sawicki (2009) suggests that future research should consider increasing the breadth and depth of the criteria in order to produce a more accurate measure of corporate governance. In addition to this disadvantage, Sawicki (2009) indicated that the results of the corporate governance index

might be subject to a problem of bias, because the method of computing the governance score of the index depends on disclosure of governance practices in the companies' annual reports. Although this approach provides a degree of objectivity, the results might be biased if the company followed the practices of corporate governance but did not disclose them in the annual reports. Based on this limitation, Sawicki (2009) and Zulfiqar et al. (2009) state that that the low score in the corporate governance index might not necessarily mean that the companies had not applied the corporate governance practices. It could mean that the company has poor disclosure in which they provide insufficient information about its corporate governance practices in its annual reports. Consequently, this could bias the results.

However, by using a different approach to weight the corporate governance index provision, Zulfiqar et al. (2009) studied the effect of corporate governance quality on earnings management practices using a sample of 53 firms listed in the Karachi Stock Exchange KSE100 Index. The study builds a corporate governance index containing 3 dimensions: Board structure, ownership structure and Audit committee independence. Each dimension of the index has been given a different weight based on its importance in constraining earnings management practices. For example, the presence of independent directors on the Board and in the Audit committee was weighted 55%. This is because board structure is a core issue of corporate governance, in which a balanced and effective board is considered essential for good governance. In contrast to the hypothesis of the study, the results showed that a high quality of corporate governance leads to an increase in earnings management practices. However, the measure of corporate governance quality in this study has a disadvantage. According to Zulfiqar et al. (2009), giving different scores or different weights for each corporate governance provision involves considerable subjectivity, as it depends on the opinion of each researcher. Also, the inclusion or exclusion of certain corporate governance features is subject to great subjectivity as well. This problem arises because the literature lacks a well-established theory for constructing a corporate governance index (Al-Najjar & Al-Najjar, 2017; Baker & Anderson, 2010b; Scholtz & Smit, 2015; Brown et al., 2011).

By taking a different theoretical perspective (i.e. not agency theory) to examine the relationship between corporate governance and earnings management, Elghuweel et al. (2016) examined the effect of firm level corporate governance, Islamic governance and other individual corporate governance variables, which are board size, audit firm size, presence of the corporate governance committee, and board diversity on earnings management practices . The study adopts a behavioural theory perspective which suggests that corporate board

decisions or managers' decisions might not be influenced solely by their skills, knowledge or experience; rather, board decisions are influenced by the members' values and cultural or religious beliefs. Grounded on this assumption, the study argues that corporate decision-making might not be affected only by formal managerial incentives and corporate governance mechanisms, but that informal corporate governance arrangements, bounded rationality, political bargaining, routinisation and satisficing behaviour may also have an effect on such decision-making. The study used a sample of 116 Omani listed companies from the years 2001-2011. However, the study measured firm level corporate governance by constructing a composite corporate governance index based on the 2002 Omani Corporate Governance Code and the 1974 Companies Act. The strength point of this study is that they used a self-constructed governance index that is based on local governance regulations rather than using subjective analysts' corporate governance rankings/indices provided by international professional organisations, which might not be applicable to the Omani corporate context due to differences in corporate governance regimes. The authors state that relying on local corporate governance when constructing a corporate governance index will produce a more applicable tool for assessing the practices of corporate governance in the company. The corporate governance index has four broad categories: (i) board of directors; (ii) accounting and auditing; (iii) external auditors and internal control system; and (iv) disclosure and transparency. These categories contain 72 individual corporate governance provisions. In order to assess the reliability of the index the study calculated Cronbach's coefficient alpha, the mean coefficient alpha being 0.78. However, Ho (2006) states that if the alpha is equal to 0.80 or more, this indicates that all items in the index are reliable and the entire test is internally consistent. Thus, it could be said that the level of reliability of the index is close to the suggested level, which makes the index reliable. The study uses the equally weighted method in order to calculate the score of the index, whereby a score of 1 will be given to the firm if certain corporate governance provisions are applied and 0 otherwise. The study found that, on average, better-governed corporations tend to engage significantly less in earnings management than their poorly-governed counterparts. Also, the study found that firms having established Islamic governance committees engage significantly less in earnings management. Yet the study did not find that the other individual corporate governance variables, namely, board size, audit firm size, presence of the corporate governance committee, and board diversity, had the effect of reducing earnings management practices.

Al-thuneibat (2016) examines the effect of Saudi listed companies' compliance with corporate governance requirements regarding the independence, competence and scope of

work of the internal audit, board of directors and audit committee, on earnings management practices. The study used a questionnaire-based governance index to collect data from financial managers and internal auditors related to the compliance of 90 Saudi listed companies for the year 2011. The index of the study consists of 54 questions, measured by a five-point Likert scale, in order to capture the extent of compliance for each corporate governance mechanism. The study computed Cronbach's alpha in order to test whether each item in the questionnaire-based index measured a corporate governance principle in a reliable manner. It documented that the alpha coefficients for the items measuring the requirements of board of directors, internal audit and audit committee ranged from 0.82 to 0.90, which reflects the high reliability and internal consistency of the index.

Then, the financial statements of 90 Saudi listed companies for the year 2011 were used to calculate discretionary accrual (proxy of earnings management) based on a modified Jones model. The results show that although there is very high compliance in these companies with the corporate governance requirements, there is no significant effect on these corporate governance mechanisms in terms of constraining earnings management practices. The study raises a question about the effectiveness of corporate governance practices in Saudi companies. The study further examined the effect of separate categories in the index on earnings management practices and reported that there was no statistical effect of each corporate governance dimension in the index, namely, the independence, competence and scope of work of the internal audit, board of directors, and audit committee, on reducing earnings management practices.

However, this study could be criticised for using a small sample (only 90 companies) and covering only one year. Also, the study did not cover compliance with other important corporate governance requirements, such as the disclosure and transparency section in the Saudi Corporate Governance Code. In addition, this study may not provide an accurate measure of the extent of compliance with the corporate governance mechanism, because the measure of compliance was based on the perception of financial managers and internal auditors, which may involve considerable subjective judgement. This view was supported by Bozec & Bozec (2012) ,who criticised questionnaire-based indices of corporate governance as involving a great deal of bias, since companies tend to provide subjective information about their compliance. Therefore, a better way to capture compliance would be to collect this information from the companies' annual reports.

Based on the discussion of the reviewed studies above,this study will contribute to the literature by first measuring the firm-level governance disclosure of the Saudi firms using the corporate governance index. As discussed above, using a governance index to proxy for firms' governance system will overcome the limitations of using individual governance mechanisms to proxy for overall governance in the companies. For example, using the corporate governance index might offer reliable criteria for ranking the companies based on the strengths of their corporate governance systems because the governance index incorporates the assessment of multiple corporate governance mechanisms in one index (Pergola & Joseph, 2011). Also, a governance index provides more convincing evidence of the effect of corporate governance factors on the quality of earnings than individual corporate governance characteristics (Jiang et al., 2008; F. Bekiris & Doukakis, 2011; Brown et al., 2011). This is because a corporate governance index will be more comprehensive by virtue of incorporating several individual measures of the corporate governance system into one index. Also, such an index might account for the interrelation effect between different corporate governance mechanisms (Elghuweel et al., 2016; Agrawal & Knoeber, 1996). Thus, the conclusion of the study regarding the effect of corporate governance on earnings management practices will not be limited to certain components of corporate governance such as audit committee characteristics or board composition (Bekiris & Doukakis, 2011).

Second, unlike the study of Bekiris and Doukakis (2011), which constructs its own corporate governance index based on the UK Corporate Governance Code and measures the corporate governance quality of firms located in different countries, the current study constructs a governance index based on the 2017 Saudi corporate governance. Hence, this index might be considered broad in scope and applicable to the Saudi context since it is derived from Saudi governance regulations. In this regard, B. Black et al. (2017) empirically found that constructing a governance index by using country-specific governance elements leads to an increase in the construct validity of the governance index. This is because these country-specific governance elements reflect the local norms, institutions, and data availability of the governance arrangements in the company.

Furthermore, a governance index constructed on the basis of local governance regulations will incorporate governance provisions dealing with the required governance arrangements that should be available in the firms. For example, the highly concentrated ownership found in Saudi Arabian listed companies might create the conditions of a new agency problem (agency problem type II), where there is conflict of interest between majority and minority shareholders (Aguilera et al., 2012). Aguilera and Desender (2012) argue that, due to the

possible existence of a different agency problem, the governance index should contain governance provisions that deal with the specific type of agency problem. Otherwise, the governance index will suffer from major limitations. Thus, listed companies in Saudi Arabia require governance arrangements that solve the agency problem found in these companies (agency problem type II). The 2017 Saudi governance code developed by the Capital Market Authority in Saudi Arabia has introduced specific corporate governance provisions aimed at solving the type II agency problem. In response to this issue, the 2017 Saudi corporate governance code required that specific terms of independence should be met by the independent directors. For instance, (i) it required that independent directors shall not own 5% or more of the shares of the company. (ii) In order to prevent possible collusion between the independent directors and the majority shareholders in the companies, the Saudi governance code required that the independent directors shall not have a blood relationship with shareholders who own 5% or more of the shares of the company. (iii) The independent directors shall not have a blood relationship with other independent director and executive teams of the company. The focus on the blood relationship in these requirements stems from the fact that Saudi listed companies have concentrated ownership mainly in the hands of families (Alhebri & Al-Duais, 2020). These requirements are in line with the study of Bozec and Bozec (2012), who suggested that companies with controlling shareholders should focus on governance arrangements that ensure the independence of the board of directors from the controlling shareholders in companies. Yet, these terms of independence which are required of independent directors will be placed in the current study index (provisions no. 7-17) in order to check the independence of the independent directors of Saudi companies. In addition, in order to protect minority shareholders' interests, the Saudi Corporate Governance Code (2017) focuses on increasing the company's disclosure and transparency. For example, the Saudi code requires the board to disclose the procedures adopted to inform its members of suggestions and notes provided by the shareholders about the performance of the company. Also, the policy on dividends and related party transactions should be disclosed in the companies' annual reports. These requirements are transferred in the form of governance provisions in this study's governance index (provisions no. 80, 100 and 102 respectively). Thus, the Saudi corporate governance index used in this study will be relevant for assessing the corporate governance system in Saudi listed companies, since it covers the governance provisions designed to solve the specific type of agency problem that exists in blockholder governance systems like that in Saudi Arabia.

Third, this study contributes to the literature by examining the influence of corporate governance practices on earnings management by using both the equilibrium-variable model

(individual corporate governance characteristics as the main independent variables in the model) and the compliance-index model (composite governance index as the main independent variable in the model). The majority of prior studies in the literature examine the influence of corporate governance on earnings management practices by using either the individual corporate governance characteristics (Sáenz González & García-Meca, 2014; Rahman & Ali, 2006; Jamaludin et al., 2015; Peasnell et al., 2005; Saona et al., 2020) or by using the corporate governance index to proxy for the corporate governance system in the companies (Larcker et al., 2007; Bowen et al., 2008; Lehmann, 2016). However, there are limited studies that combine the two methods (e.g., Elghuweel et al., 2016; Feng & Huang, 2020). It is fundamental for the study results to examine the influence of corporate governance on earnings management by using both the individual corporate governance characteristics and the composite governance index. This is because both approaches have deficiencies that could be eased if they are used jointly. For instance, as discussed above, using a governance index will overcome the limitations of using individual governance mechanisms to proxy for overall governance. However, constructing a governance index has several drawbacks that can be overcome using individual governance mechanisms. For example, Baker & Anderson (2010) and Daines et al. (2010) claim that the governance index contains more measurement error than a single governance variable. According to Baker & Anderson (2010), using single governance characteristics such as board's stock ownership might have lower measurement error because it requires one value to be recorded. However, the governance index has numerous governance provisions which cover different governance aspects. Hence, the chance of making mistakes in recording these values is higher than in the case of single governance provisions. Consequently, higher measurement error affects the accuracy of the calculation of the overall proxy of the governance practices (Baker & Anderson, 2010). Thus, it will render the measure of the governance index invalid. Yet, the measurement error in the governance index is not only related to mistakes in recording the governance values; it could also arise from the inherent limitations of constructing a governance index (Schnyder, 2012). For example: first, the researchers tend to include any governance provision in the index without theoretical justification for including them (Brown et al., 2011; Schnyder, 2012) since the literature lacks a theory in this regard (Al-Najjar & Al-Najjar, 2017; Baker & Anderson, 2010b; Scholtz & Smit, 2015; Brown et al., 2011). Second, the weighting of each provision in the index is not justified due to the absence of a theoretical guide (Brown et al., 2011; Schnyder, 2012). Therefore, as this study used a governance index that consisted of 142 provisions and collected the governance data manually, there is a high possibility that a measurement error may occur.

In addition, one of the limitations of the governance index is that it is used to measure the overall predictive power of the list of governance provisions aggregated in the index (Bebchuk et al., 2009). Therefore, researchers cannot identify which governance provisions in the index drive the overall predictive power and affect the corporation outcome (Bebchuk et al., 2009). For example, Gompers et al.'s (2003) construct governance index (G-index) for US firms, which contains 24 corporate governance provisions, documented that this index predicts the firm value. Yet, Bebchuk et al. (2009) empirically found that only 6 governance provisions in the G-index were negatively associated with the firms' value as measured by Tobin's Q. Bebchuk et al. (2009) interpret this result by stating that the negative association found between G-index and firm value in Gompers et al.'s (2003) study were entirely driven by these 6 provisions only and the remaining 18 provisions were found to have no significant and negative association with firm value. Moreover, one of the limitations of constructing a corporate governance index is that corporate governance factors might substitute for instead of complementing each other. If this substitution effect occurs, the governance index might not be suitable for measuring the firms' governance practices. For instance, Rediker and Seth (1995) examine the substitution effect between internal corporate governance mechanisms. The study found a significant and negative relationship between the percentage of independent directors on the board and the percentage of stock held by large shareholders. This result indicates that there is a strong substitution effect between monitoring by outside directors vs monitoring by large shareholders. Rediker and Seth (1995) interpret this result by stating that firms with large outside shareholders might depend less on the monitoring services provided by the independent directors. This is because large shareholders are motivated to incur the cost of monitoring managerial practices. These shareholders might bear the substantial cost associated with decisions that might reduce the firms' value as they own a large equity stake in firms. However, if the substitution effect arises between governance attributes, measuring the corporate governance by the index might produce an inaccurate result (Baker & Anderson, 2010), since it is not accurate to treat governance mechanisms as if they complement each other by assigning positive weight and aggregating them in the index, if they actually substitute for each other (Baker & Anderson, 2010). Baker and Anderson (2010) argue that such an index might produce incorrect results regarding the quality of the firms' governance. This problem is inherent in constructing a governance index, since no theory in the literature explains when or whether the governance mechanisms substitute for or complement each other (Baker & Anderson, 2010).

Despite the above limitations of the governance index, using an individual governance mechanism to proxy for the overall governance has several advantages that help offset the

limitations of the governance index. For example, using individual governance variables will reduce the probability of the measurement error inherent in the governance index (Baker & Anderson, 2010). Second, the researcher will avoid the issue of weighting different governance items (Schnyder, 2012). Third, the researcher will also avoid the issue of the interaction of different corporate governance attributes (when or whether governance arrangements substitutes or complement each other) (Schnyder, 2012). Fourth, it will allow the researcher to identify the governance factors that drive the governance practices' effect on earnings management. Hence, based on the above discussion, it can be concluded that using both the equilibrium-variable model and the compliance-index model will help the researcher to capture more precisely the role of corporate governance on earnings management practices, since each approach will offset the limitations of the other.

2.2.2 Strict Board Independence

The association between board independence and earnings management practices is grounded in agency theory. Agency theory suggests that, due to the separation between the management of the firms and the owners in the modern large corporations, there is an agency problem that might arise between the owner (principal) and the managers (agent) of the firm due to the conflicts of interest between them (Jensen & Meckling, 1976). Given this, managers of the firms might act opportunistically to satisfy their own interests, or might not expend sufficient effort in pursuing the firm's objectives (Jensen & Meckling, 1976). Thus, from the agency theory perspective, corporate governance mechanism might be an effective monitoring strategy which would help in curbing the opportunistic behaviour of the agent and mitigating the agency problem (Hoque, 2006; Fama & Jensen, 1983; Haniffa & Hudaib, 2006; Bonazzi & Islam, 2007; Peasnell et al., 2005; Abdul Rahman & Haneem Mohamed Ali, 2006). This is because corporate governance mechanism provides a monitoring role over management activities. For instance, Fama and Jensen (1983) consider the board of directors as the decision control system in the company for the purpose of monitoring the management decision process. The board is also responsible for employing and firing managers as well as setting their remuneration packages. In addition, it is responsible for monitoring the practices of the top management as well as overseeing the daily operation of the company (Fama & Jensen, 1983). Thus, Fama and Jensen (1983) suggest that the board of directors should include outside independent directors, which can increase the effectiveness of the board of directors and decrease agency problem. Prior studies provide explanations of why outside directors may be effective actors in the board of directors. First, independent directors do not have personal interests in the firms. Thus, they are more willing

to act in favour of shareholders' interests (Agrawal & Chadra, 2005; Razali & Arshad, 2014; Shan et al., 2013). Second, it is not in the interests of independent directors to hide accounting problems or fraudulent activities which may be committed by management, since independent directors may face serious damage to their reputation if such practices are uncovered in their companies (Abdullah et al., 2010). Such a development might also diminish their chances of serving on other companies' boards of directors (Fich & Shivdasani, 2007). In the same vein, Fama and Jensen (1983) indicate that outside directors are motivated to provide effective monitoring to signal their good reputation to the external labour market.

Furthermore, one of the main responsibilities of the corporate boards is to monitor the quality of the financial information in the financial reports (Vafeas, 2000). This task is important because managers of the firm might exercise their discretion in reporting earnings in order to promote their self-interests (Healy, 1985; Jensen & Meckling, 1976). For example, since the shareholders of public listed firms cannot observe the behaviour of managers directly, shareholders, in this case, might use a compensation plan based on reported earnings to monitor the performance of the managers (Healy, 1985). This compensation plan is a form of agency contract between the companies and their managers (Healy, 1985). The aim of this compensation plan is to align the interests of the managers and the owner by compensating the managers based on reported current earnings of the firm (Healy, 1985). Thus, managers of a firm that adopts a compensation plan based on reported earnings might have an incentive to increase the reported earnings of the firm in order to obtain higher compensation value (Healy, 1985). Therefore, earnings management practices might be used by the managers to serve their own interests, however, the presence of the board of directors in the companies that effectively perform its controlling task will help to constrain such managerial opportunistic behaviours (Stockmans et al., 2013).

In line with the theoretical view discussed above, governance regulations around the world have emphasised the importance of including independent directors on the board. For example, the 2018 UK Corporate Governance Code recommended that the minimum number of independent directors on the nomination and remuneration committee should be three. Likewise, the 2017 Saudi Corporate Governance Code recommended that the number of independent members on the board shall not be less than two members or one-third of the board members, whichever is greater.

Nevertheless, as suggested by Fama and Jensen (1983), the inclusion of independent directors on the board will strengthen its effectiveness in performing its mentoring task; thus, a vast majority of studies in the literature have examined the effect of board independence in constraining earnings management practices by using data from developed and developing countries (Saona et al., 2020; Suyono & Farooque, 2018; Katmon & Farooque, 2017; Habbash, 2012; Abdul Rahman & Haneem Mohamed Ali, 2006). However, the results of these studies are mixed. For example, Saona et al. (2020) examine the effect of board independence on constraining earnings management practices in a sample of Spanish listed firms from the years 2006 to 2014. The results show that the large proportion of independent directors on the board reduced the practices of earnings management. In contrast, Katmon and Farooque (2017) reported that the proportion of the independent directors did not have a significant effect on constraining earnings management in UK listed companies.

By using a sample of Saudi listed companies from the years 2006 to 2009, Habbash (2012) examined empirically the effect of corporate governance attributes on earnings management practices. Several corporate governance variables examined in this study which are board independence, board size, the frequency of board meetings, chairman independence and the existence of nomination and remuneration committees. The study estimated earnings management practices by using the Kothari et al. (2005) model. The result of the study indicated that only board independence and the board size were effective in reducing earnings management practices. Unlike the above studies, Rahman and Ali (2006) reported no significant relationship between board independence and discretionary accrual (proxy of earnings management) in Malaysian listed companies.

Other studies in the literature examine the effectiveness of independent directors in reducing earnings management practices when such practices are used by managers to achieve financial targets. The results of these studies are also mixed (Peasnell et al., 2005; Park & Shin, 2004). For example, Peasnell et al. (2005) investigated whether independent directors effectively take action in constraining earnings management practices when there is a high incentive for managers to manipulate the earnings. The study shows that managers use income increasing earnings management practices to manipulate earnings upwards when the value of current unmanaged earnings is lower than last year's reported earnings. However, firms that have a high percentage of independent directors on the board are less likely to use income increasing earnings management practices to meet or exceed financial targets. By contrast with these results, Park and Shin (2004) found that the proportion of independent directors is not effective in reducing income increasing earnings management practices that

are used by managers to avoid reporting losses and decline in the earnings. The study utilised a sample of non-financial Canadian firms. It can be noticed from the discussion above that results of the studies are mixed. It can be argued that use of an inaccurate measure to proxy for board independence might be the reason for the insignificant or contradictory results obtained by prior studies that examine the effect of board independence on earnings management practices.

One criticism of much of the literature that examines the effectiveness of board independence is that these studies measure the board independence by using the percentage of independent directors declared by the firms as a proxy for board independence (e.g. Park & Shin, 2004; Peasnell et al., 2005; Saona et al., 2020; Suyono & Farooque, 2018). These studies assumed that the higher the proportion of independent directors on the board, the more the board will be independent and effective in performing its monitoring tasks (Stockmans et al., 2013). These studies did not consider the quality of the directors' independence when computing the ratio of independent directors (Crespí-Cladera & Pascual-Fuster, 2014; García-Meca & Sánchez-Ballesta, 2009). In this regard, Crespí-Cladera and Pascual-Fuster (2014) and Kusnadi et al. (2016) criticise the use of the proportion of independent directors on the board to proxy for board independence because firms themselves classify the directors as independent according to the criteria of independence that are recommended by stock market regulations or governance codes. The fact that the firm performs by itself the evaluation of the independence of the independent directors increases the risk of a divergence between independent directors in principle and independent directors in practice (Prencipe & Bar-Yosef, 2011). This divergence might increase further when a family dominates the board of directors which is responsible for verifying the independence of the independent directors (Prencipe & Bar-Yosef, 2011). In line with this discussion, Bao and Lewellyn (2017) argue that using the ratio of the independent directors that is declared by the firms to proxy for the board's independence might not provide reliable results, since this measure may not capture the independence of the independent directors from the controlling shareholders or the managers of the firms (Bao & Lewellyn, 2017).

By holding the same viewpoint as Crespí-Cladera and Pascual-Fuster (2014) , Kusnadi et al. (2016) and Bao and Lewellyn (2017), Baker and Anderson (2011) argue that using the percentage of independent directors to proxy for the board independence might not be accurate measure since not all independent directors have a similar level of independence, because their independence might be negatively affected by other factors in the firms.

Consequently, their effectiveness will also be questionable. For example, controlling families in public firms might compromise and reduce the independence of the independent directors. This is because controlling shareholders, such as family owners, may be involved in the appointment of independent directors. As a result, those independent directors are less likely to question the practices of family shareholders in the firms, particularly if they sit on the board, because their reappointment might depend on the family's discretion (Jaggi et al, (2009). Thus, the presence of independent directors who are not independent enough might reduce the effectiveness of the board in detecting earnings management practices. Empirically, Jaggi et al. (2009) and Prencipe and Bar-Yosef (2011) provide evidence to support this argument, they found that the effectiveness of the independent directors in constraining earnings management practices is reduced in family-controlled firms.

In addition, it is not accurate to treat all the independent directors in the firms as a homogeneous group in terms of their independence and effectiveness. Francis et al. (2012) and Coles et al. (2014) find that not all independent directors are effective monitors. For instance, Francis et al. (2012) empirically found that not all independent directors have the same level of effectiveness in performing their monitoring activities. The study used the traditional measure, which is the percentage of the independent directors on the board as declared by the firms, to proxy for board independence. Then, they examined the effect of board independence (as proxy, by the percentage of declared independent directors on the board) on improving the firm's performance during the financial crisis. The study found no significant effect of the proportion of these independent directors on enhancement of the firms' stock performance during the financial crisis. Consequently, the study redefined the proxy of board independence by considering only the proportion of independent directors who were less connected with the current CEO of the firms. They called this measure strong independence. The study found that independent directors who are less connected with the current CEO of the firms were effective in improving the stock performance of the firm during the financial crisis. The study concluded that the effectiveness of independent directors depends on their level of independence. Hence, using the proportion of independent directors as declared by the firms will not capture the various levels of independence and effectiveness between the independent directors on the board. A similar conclusion is reported by Coles et al. (2014), who examine whether the effectiveness of the monitoring differs between independent directors who are appointed by the CEO of the firm (co-opted by the CEO) and independent directors who are not appointed by the CEO (non-co-opted). In contrast to independent directors who are co-opted by the CEO, the study found that independent directors who are non-co-opted by the CEO (truly independent directors) are

associated with a lower level of CEO pay, higher sensitivity of CEO turnover to performance, and lower investment. This result indicates that non co-opted independent directors are more effective in monitoring the CEOs of the firm than independent directors who are co-opted by the CEO, which in turn suggests that not all independent directors have a similar level of monitoring and effectiveness. Coles et al. (2014) reported results suggesting that the dissimilar level of monitoring and effectiveness among independent directors might explain the contradictions in the results obtained by previous studies that used the traditional measure of board independence to test the monitoring and effectiveness of independent directors. This is because the traditional measure of board independence that used by previous studies does not distinguish between independent directors having high/low levels of independence.

Apart from the above criticism of using the percentage of independent directors on the board to proxy for board independence, there are attempts by some studies in the literature to evaluate the independence of the independent directors on the board (e.g., Crespí-Cladera and Pascual-Fuster ,2014; Jaggi et al. ,2009) . These studies have used several independence criteria to evaluate the independence of the independent directors on the board. For example, Crespí-Cladera and Pascual-Fuster (2014) evaluate the independence of each director that declared as independent directors by the firms using eight independence criteria. The study defined non-strict independent directors as those independent directors who violate at least one of eight criteria of "independence" that stated in international and Spanish governance codes. Jaggi et al. (2009) excluded grey independent directors in calculating the proportion of independent directors on the board. Thus, according to their proxy of board independence, independent directors are considered grey directors if they hold any executive position in the firms, have any relationship to the firm and are involved in related party transactions with the firms. The results of the study show that the higher proportion of independent directors on corporate boards is associated with lower earnings management practices. However, the effectiveness of the independent directors in constraining earnings management practices is reduced when a family controls the firms via both ownership concentration and the presence of family members on the board.

Despite the prior studies discussed above, there are some studies in the literature that examine the effect of board independence on earnings management practices by considering evaluating the independence of the independent directors on the board based on only one independence criterion. For example, Setia-Atmaja et al. (2011) excluded from their measure of board independence all independent directors who had worked previously as executives

in the firms. Then, the study found that the proportion of those independent directors had a negative and significant relationship with earnings management practices via both long and current discretionary accrual. Similarly, Davidson et al. (2005) excluded from their measure of board independence all outside directors who engaged in transactions with the firms. Then, Davidson et al. (2005) examined the role of these independent directors in earnings management practices based on a sample of Australian listed firms for the year 2000. Their findings indicated that board independence is negatively associated with earnings management practices.

Although these studies evaluate the independence of the independent directors by using independence criteria, their measures still contain some limitations. For example, apart from Crespí-Cladera and Pascual-Fuster's (2014) study, first, some of the previous studies, such as ,Davidson's et al. (2005) study rely on only one factor to evaluate the independence of the independent directors. Second, they evaluate board independence based on informal independence criteria which might not take into account the differences in the role of independent directors between firms in the Anglo-American context and those in the non-Anglo-American context (e.g., Setia-Atmaja et al. ,2011) . This is important because the role of independent directors might differ based on the institutional environment of the firms. For example, the role of independent directors differs between the Anglo-American context and non-Anglo-American context (Crespí-Cladera & Pascual-Fuster, 2014). Firms in the Anglo-American context are characterised by widespread ownership, resulting in a conflict of interests between shareholders and managers (Bozec & Bozec, 2012). Therefore, the main role of the independent directors in firms operated in Anglo-American countries is to mitigate managerial opportunistic behaviours (Crespí-Cladera & Pascual-Fuster, 2014), while in the non-Anglo-American context, firms are characterised by concentrated ownership mostly in the hands of families (Cuervo, 2002). The conflict of interests in these firms is between majority and minority shareholders (Bozec & Bozec, 2012). Thus the main role of independent directors in this situation is to minimise the extraction of private benefit by the controlling shareholders, which might involve also appointing the directors on the boards (Crespí-Cladera & Pascual-Fuster, 2014).

Therefore, due to these differences in the role of independent directors in Anglo-American countries and non-Anglo-American countries (developing countries), different independence criteria are needed to obtain better evaluations of the board independence of companies in each of these countries. For example, in developing countries, due to the concentrated ownership and the possible influence of these controlling shareholders on the

board of directors, independence criteria should focus on ensuring the independence of the board of directors from the controlling shareholders. However, in dispersed ownership structures, independence criteria should focus on the independence of the board of directors from the management.

In contrast with these suggestions, Setia-Atmaja et al. (2011) do not consider excluding independent directors who have family ties with the management team or other directors on the board, or family owners, when they examine the effect of board independence on constraining earnings management practices in family firms. Setia-Atmaja et al. (2011) excluded from their measure of board independence only independent directors who had previously worked as executives in the firms. Their measure of board independence would be improved if they considered excluding independent directors who have family ties with the firms. This is because independent directors in family-controlled firms are more likely to be influenced by the controlling families.

Thus, in order to effectively examine the impact of board independence on earnings management practices, this study developed a measure for strict board independence. This measure will be applicable to the context of Saudi firms since it contains 11 formal independence criteria extracted from the 2017 Saudi Corporate Governance Code. All the 11 formal independence criteria will be applied to all board directors who declared as independent directors by the firms. The study depends on publicly available information in the annual reports of the firms to evaluate the independence of each independent director on the board. The study defines strict independent directors as those independent directors who meet all the 11 formal independence criteria recommended by the 2017 Saudi Corporate Governance Code. Thus, any independent director who violates at least one of the 11 independence criteria will not be considered an independent director, and he/she will be excluded from the measure of board independence. The 11 independence criteria are shown in chapter five Table 5.4

Unlike previous studies (Francis et al., 2012; Setia-Atmaja et al., 2011; Davidson et al., 2005; Hwang and Kim, 2009; Coles et al., 2014) that evaluate the independence of the independent directors by using only one independence criterion, the measure of strict independence in this study contains 11 formal independence criteria, covering many factors that might impair the independence of the independent directors. For example, it is not allowed for the independent directors to become controlling shareholders in firms or represent a legal person that holds five percent or more of the shares of the Company. In

addition, the measure of strict independence requires that independent directors should not engage in any business that competes with the firm's activities. It requires, also, that independent directors should not have direct or indirect interests in the businesses and contracts executed for the Company's account. Thus, the measure of this study is broader than previous independent measures that evaluate the independence of the independent directors by using only one independence criterion (Francis et al., 2012; Setia-Atmaja et al., 2011; Davidson et al., 2005). For example, Setia-Atmaja et al. (2011) excluded in their measure of board independence all independent directors who had previously worked as executives in the firms. Likewise, Davidson et al. (2005) excluded from their measure of board independence all outside directors who had engaged in a transaction with the firms. These proxies that focus on only one dimension of the independence of independent directors cannot be considered to provide an encompassing measure of independence. Hence, the lack of a well-accepted measure of board independence in the literature limits the conclusion that one can draw from the existing studies regarding the effects of board independence in constraining earnings management practices.

Furthermore, distinct from Setia-Atmaja's et al. (2011) study that do not consider excluding independent directors who have family ties in the firms when they examine the effect of board independence on constraining earnings management practices in family firms ,the strict independence measure that used in this study contains 11 formal independence criteria which are applicable to the context of Saudi firms that dominated by family shareholders (Alhebri & Al-Duais ,2020). It is important to use such measure for the Saudi context because the highly concentrated ownership found in Saudi Arabian listed companies might have negative implications on the board's independence. For instance, the highly concentrated ownership found in Saudi Arabian listed companies might create the conditions of a new agency problem (agency problem type II), where there is a conflict of interest between majority and minority shareholders (Aguilera et al., 2012). Although controlling shareholders have the incentive and the power to discipline managers, the existence of a conflict of interest between majority and minority shareholders poses the risk of majority shareholders pursuing their own benefit at the expense of other shareholders (Aguilera et al., 2012). Thus, to serve their own interests controlling shareholders might engage in electing independent directors, whose independence might be compromised as a result (Jaggi et al., 2009). Also, they might intentionally elect less independent directors in order to maintain their control and gain support for their policies (Wu et al., 2016).

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Since the above-mentioned factors might negatively affect the board's independence in Saudi firms, it is crucial to use measure that includes independence criteria that focus on ensuring the independence of the board of directors from the controlling shareholders. Thus, the study used the independence criteria in the 2017 Saudi Corporate Governance Code to evaluate the board's independence. This governance code required specific terms of independence to be met by the independent directors in the Saudi firms. First, it required that independent directors should not own 5% or more of the shares of the company. Second: in order to prevent possible collusion between the independent directors and the majority shareholders in the companies, the Saudi governance code required that independent directors should not have a blood relationship with shareholders who own 5% or more of the shares of the company. Third, the independent directors should not have a blood relationship with other directors of the company or its subsidiaries. The focus on blood relationship in these requirements stems from the fact that Saudi listed companies have concentrated ownership mainly in the hands of families(Alhebri & Al-Duais ,2020) . These requirements are in line with the suggestions of Bozec and Bozec (2012) that companies with controlling shareholders should focus on governance arrangements that ensure the independence of the board of directors from these controlling shareholders. Hence, it is expected that the strict independence measure used in this study will provide accurate evaluations of the independence of the board of directors in the Saudi firms.

2.2.3 Audit Committee Independence

The audit committee is an essential component of the governance system in terms of constraining earnings management practices. This is because the role of the audit committee is to supervise the process of financial reporting, evaluate the firm's internal control systems, and ensure that the external auditor is capable of detecting any manipulation in financial reporting (Felo et al., 2005; Klein, 2002). Among the responsibilities of the audit committee is to facilitate communication between managers and external auditors in order to ensure the objectivity and independence of the external auditors (Vicknair et al., 1993). In addition, the audit committee is responsible for conducting a proactive discussion with the external auditors and the managers regarding the application of accounting standards that require managerial judgements (Bédard et al., 2004). The audit committee provides the board of directors with detailed information in order to help them understand the firm's financial statements. This practice will enhance the capacity of the board of directors to monitor the management (Pincus et al., 1989).

The role of the audit committee is vital in the firm because agency theory suggests that managers might behave opportunistically in pursuing their personal interests (Jensen & Meckling, 1976). Managers of the firm might exercise their discretion in reporting earnings in order to promote their self-interests (Healy, 1985). For example, managers of a firm that adopts a compensation plan based on reported earnings might have an incentive to increase the firm's reported earnings in order to obtain higher compensation value (Healy, 1985). Thus, the audit committee should focus on ensuring that the managers report reliable information on the firm's performance. Manipulation of financial information by managers is detrimental to shareholders' value because shareholders will receive incorrect information about the firm's performance (Kusnadi et al., 2016). This, in turn, will increase the cost of capital as well as the information asymmetry between managers and shareholders (Kusnadi et al., 2016). The audit committee can reduce the information asymmetry and the agency conflict between managers and shareholders by providing the shareholders with credible and unbiased financial statements (Klein, 1998; Becker et al., 1998).

It is argued in the literature that the independence of the audit committee is important for its effectiveness. Klein (2002) states that the effectiveness of the audit committee in monitoring the process of financial reporting depends on the independence of the audit committee members. A similar view is suggested by Wan Mohammad and Wasiuzzaman (2019), who state that the independence of the audit committee improves the corporate governance in the firm and makes the audit committee effective as a monitoring device. This is because an independent audit committee can objectively question the practices of the management. Also, Fama and Jensen (1983) suggest that the inclusion of independent directors will increase the effectiveness of the board. In line with this argument, Vicknair et al. (1993) state that the audit committee should be independent of the management. This is to keep the internal and external auditors free from intervention by the firms' managers.

Due to the importance of independent directors on the audit committee, several studies in the literature examine the effect of independent directors on the audit committee in constraining earnings management practices (Katmon & Farooque, 2017; Saona et al., 2020; Baxter & Cotter, 2009). Saona et al. (2020) examine the effect of audit independence, measured as the proportion of independent directors, on reducing earnings management practices in a sample of Spanish listed firms. The study utilises the working capital accrual version of the Jones (1991) model (short term accrual) as a measure of earnings management practices. The study finds that independent directors on the audit committee are capable of reducing short-term earnings management practices. In contrast, Katmon and Farooque

(2017) found no significant effect of the audit committee that was entirely comprised of independent directors in reducing earnings management practices on a sample of UK listed firms. Likewise, Baxter and Cotter (2009) studied the effect of audit committee independence on improving earnings quality in Australian listed companies before the implementation of compulsory audit committee requirements. The study observed that the ratio of the independent directors on the audit committee was negative but exhibited insignificant association with earnings management practices as measured by the Modified Jones Model (1995).

Other studies documented that the audit committee's independence was only effective in constraining aggressive earnings management practices. For example, by using a different statistical approach, namely quantile regression, Feng and Huang (2020) investigated the effect of the independent audit committee on decreasing earnings management practices. Based on a sample of non-financial US firms, the study found that the independence of the audit committee was effective in constraining earnings manipulations in firms that had high quantile levels of earnings management practices. Yet, this effect became insignificant for firms that had medium and low quantile levels of earnings management. These results suggest that the audit committee acts as an effective governance tool only when the managers engage in an aggressive earnings management practice, but that the audit committee might not strictly interfere when the managers engage in a small amount of earnings manipulation. Similar findings are reported by Bédard et al. (2004), whose study found that an audit committee comprised solely of independent directors is effective in reducing aggressive income increasing and income decreasing earnings management practices, but that this effect does not hold for an audit committee comprised of a majority of independent directors.

The studies reported above show that the evidence regarding the effect of Audit committee independence on reducing earnings management practices is not conclusive. Several factors could clarify this issue. First, García-Meca and Sánchez-Ballesta (2009) state that using different earnings management models might explain variations in the results of previous studies. By using a Meta-Analysis approach, García-Meca and Sánchez-Ballesta (2009) found that total discretionary accrual (a proxy for long-term earnings management) and working capital accrual (a proxy for short-term earnings management practices) moderate the association between corporate governance mechanism and earnings management practices. In other words, each earnings management model might provide a different result

regarding the effectiveness of governance mechanisms[10]. For example, Saona et al. (2020) found that the independence of the audit committee is effective in reducing short-term earnings management practices as measured by the working capital accrual version of the Jones (1991) model. However, Baxter and Cotter (2009) failed to find any significant effect of audit independence on constraining long-term earnings management practices as measured by the Modified Jones Model (1995). Second, García-Meca and Sánchez-Ballesta (2009) argue that the institutional framework of each country in the studies might drive the results of the associations found between corporate governance mechanism and earnings management practices. For example, unlike developing countries, firms in Anglo-American countries have strong shareholders' protection rights, effective law enforcement, and high levels of transparency, which in turn might strengthen the governance mechanism and reduce managers' incentive to manipulate reporting earnings (García-Meca & Sánchez-Ballesta, 2009).

Third, as discussed in the previous section, the use of an inaccurate measure to proxy for board independence might be the reason for insignificant or contradictory results obtained by prior studies that examined the effect of audit committee independence on earnings management practices. In this regard, García-Meca and Sánchez-Ballesta (2009) observe that previous studies use the percentage of independent directors on the board to proxy for board independence. This measure does not capture the actual level of independence, which in turn may affect the findings of the association between corporate governance mechanism and earnings management practices (García-Meca & Sánchez-Ballesta, 2009). Moreover, García-Meca and Sánchez-Ballesta (2009) criticise previous studies that included grey independent directors in calculating the percentage of independent directors on the board without considering that these directors have a moderate level of independence. This is because grey independent directors are usually not fully independent, due to their personal or economic ties with the firms (Hsu & Wu, 2014). This makes them less effective in monitoring and questioning the practices of the managers, with whom they might have interests in common (Hsu & Wu, 2014). Hence, including them when measuring board independence might result in constructing an inaccurate measure (García-Meca & Sánchez-Ballesta, 2009). Such a measure of board independence might explain why previous studies obtained inconsistent results regarding the effectiveness of board and audit independence.

[10] Also, each earnings management model has limitations that might affect the relationship between corporate governance mechanism and earnings management practices (Dechow et al., 2012) For further details see sections 4.5.1.2.3 and 4.5.1.2.4. in the Methodology chapter.

Apart from the above criticism, there are several studies in the literature that redefine the proxy of Audit independence in examining its effect on earnings management practices. For instance, Bédard et al. (2004) exclude related independent directors from their measure of audit independence. The study considers any independent directors who have a business relationship with the firms or its managers as related independent directors. Hence, the proxy for audit committee independence included only nonrelated independent directors who have no relationship with the firms except for being independent directors. Then the study uses two dichotomous variables to measure the audit committee's independence. One variable indicates whether the audit committee is comprised merely of nonrelated independent directors. The second variable indicates whether more than half of the directors on the audit committee are nonrelated independent directors. The results of the study show that an audit committee comprised solely of nonrelated independent directors is capable of constraining aggressive income increasing and income decreasing earnings management practices. However, this effect does not hold for an audit committee comprised of majority nonrelated independent directors. Likewise, Davidson et al. (2005) measure the independence of the audit committee by excluding independent directors that engage in related party transactions with the firms. Although the study uses a strict measure for audit committee independence, it finds no significant effect of an audit committee comprised of majority strict independent directors on reducing earnings management practices.

Unlike previous studies (e.g., Davidson et al., 2005; Bédard et al. ,2004)that redefine the proxy of Audit committee independence by introducing a limited number of independence criteria, the current study constructs an audit committee independence compliance index that consists of the 11 independence criteria recommended by the 2017 Saudi Corporate Governance Code to better examine the effect of audit committee independence on earnings management practices. A value of 1 is assigned if the independent member meets one of the 11 independence criteria and 0 otherwise. The index score ranges from 1 to 11. This index is expected to provide an accurate evaluation of the status of audit committee independence, instead of using the percentage of independent directors to proxy for audit committee independence.

2.2.4 Board Size

There has been continuous debate in the literature regarding the effect of board size in constraining earnings management practices. One stream of the literature argues that a larger board provides more effective monitoring functions (Alhossini et al., 2021; Klein, 2002; Haniffa & Hudaib, 2006; Kiel & Nicholson, 2003; Biao Xie et al., 2003). This is because large boards increase the possibility of the company having more members with varied financial reporting experience as well as experience in the firm's sector (Beasley & Salterio, 2001; Saona et al., 2020). From an agency theory point of view, a larger board will be more vigilant in capturing any agency problem that may arise, as it has a high number of members observing managers' activities (Kiel &Nicholson, 2003). A large board will also be more likely to include more independent directors who are expected to perform an effective role in monitoring, advancing, and disciplining management (Jensen, 1993). Prior studies (Haniffa & Hudaib, 2006; Kiel and Nicholson, 2003) also indicated that a large number of directors on the board might bring diversity of opinions and secure important resources for companies, such as finance and information. Also, a greater number of directors will help the board delegate more responsibilities to board subcommittees than a smaller board would (Linck et al., 2008). In this regard, Klein (2002) argues that the effectiveness of board monitoring increases as boards get bigger, due to the ability of the large board to spread the workload over large numbers of directors. Hence, the above-mentioned advantages of the large board might increase the board's monitoring capacity to limit managerial opportunistic behaviours (Biao Xie et al., 2003; Klein, 2002; Dalton et al., 1999).

Despite the benefits to the company of having a large board, some studies argue that a larger board is not effective in providing monitoring of management actions; for example, Jamaludin et al. (2015) state that a large board might be affected by bureaucracy and conflict of views between its members. Haniffa and Hudaib (2006) found that a larger board could be costly to the company since it needs to pay more compensation to the larger number of members. Also, a larger board could encourage members to shirk their duties. In addition, the large board is associated with the free-riding problem. This is because the cost of not performing effective monitoring will be distributed among a large number of directors (Cheng et al., 2008). Thus, a large board may encourage the board members to free ride on other directors' decisions. In the same vein, Jensen (1993), Lipton and Lorsch (1992) and Sáenz González and García-Meca (2014) argue that a large board may suffer from problems of poor communication and coordination between its members, resulting in less coherence

and less effective discussion in the boardroom. These factors might also decrease the board's ability to react rapidly to the firm's issues, and may slow the decision-making process in the board (Lipton & Lorsch, 1992). In this regard, Williamson (2007) states that in practice, the board responds to the firm's acceptable performance by "nodding approval". The disadvantage of this practice is that the "zone of acceptance" of the board could increasingly expand to the point where it does not respond rapidly and immediately in the event of a crisis. However, Lipton and Lorsch (1992) also state that in a large board containing 10 or more directors, effective dialogue between its members might be lacking because directors could face difficulties in expressing their views and ideas within the limited time they have in the meetings. Lipton and Lorsch (1992) added that the complexity of the information that directors might deal with in the board meeting might decrease its ability to effectively perform their monitoring tasks. Hence, due to the above-mentioned disadvantages of the large board, Jensen (1993) claims that when the number of board members exceeds seven or eight, the board, in this case, may not perform effectively, and is more likely to be controlled by managers. This occurs because directors in the large board will lack the knowledge and motivation to monitor the managers. Hence the CEO, as the most knowledgeable person in the company, can easily control the board's composition and operations through determining the information flow to the directors, involves in selecting the members of the board, choosing the board's agenda, and setting the compensation policies. Hence the role of such a board will be to approve the CEO's decision, and the board members in this case are less likely to question the managerial practices (Williamson, 2007).

In contrast to the shortcomings of the large board size, Lipton and Lorsch (1992) state that a small board might not be subject to the free-rider issue due to the small number of directors involved in the board. This is because each member's performance on the board can be easily monitored (Haniffa & Hudaib, 2006). Also, directors in a small board might have the opportunity to know each other and participate in effective debate with all directors, allowing them to reach a common consensus from their discussion (Lipton & Lorsch, 1992). Yet, one disadvantage of the small board is that it might contain fewer independent directors, which might affect the board's capacity to discharge its monitoring duties (Jamaludin et al., 2015).

Empirically, several studies (Sáenz González & García-Meca, 2014; B Xie et al., 2003; Abed et al., 2012; Saona et al., 2020) examined the effect of board size on constraining earnings management practices. However, the results are not conclusive. For example, by using a

sample of non-financial Spanish listed firms, Saona et al. (2020) observed that a larger board size is negatively associated with earnings management practices. Saona et al. (2020) indicated that a larger board has more capacity than a smaller board to limit managerial opportunistic behaviours as it contains more independent directors. Similar to this finding, Habbash (2012) finds that large board size effectively reduces earnings management practices in Saudi listed firms. Likewise, B Xie et al. (2003), Abed et al. (2012), and Sáenz González and García-Meca (2014) provide evidence showing that larger boards are more effective in reducing earnings management practices because they have more members to share their different experiences in dealing with this matter. Unlike these results, Rahman and Ali (2006) documented that a large board is significantly associated with increasing earnings management practices in a sample of Malaysian listed companies.

2.2.5 Board Meetings

Prior studies (Vafeas, 1999; Adams & Ferreira, 2009; Katmon & Farooque, 2017) consider the frequency of board meetings to be an indicator of the effectiveness of the board. Katmon and Farooque (2017) state that diligent boards improve their monitoring level, which results in increasing the quality of the financial statements. This is because attending the board meeting is critical for the directors, as it might be considered the main resource through which they can acquire the essential information about the firm that they need to fulfil their responsibilities (Adams & Ferreira, 2009). Thus, directors who do not attend the board meeting might not obtain information on the firm (Adams & Ferreira, 2009). According to Minichilli et al. (2009), board members are expected to be active during the meeting. The board member should prepare him/herself before the meeting by examining the information and collecting further information if needed. This will allow the member to acquire deep knowledge about the topics discussed in the meetings and participate effectively in the decision-making process. Also, directors should be critical and willing to ask the management perceptive questions during the board meeting, which will contribute to the effectiveness of their monitoring activities (Minichilli et al., 2009).

Against this view, other researchers such as Lipton and Lorsch (1992) argue that the board of directors might not benefit from the board meetings in practice. Lipton and Lorsch (1992) indicate that board members usually have limited time in the meeting, which hinders their ability to use this time to effectively exchange ideas and opinions between the directors and the managers. Lipton and Lorsch (1992) and Vafeas (1999) state that routine activities and

formalities during the board meeting consume much time, which may restrict the independent directors' opportunities to exercise their monitoring role.

In addition, there are other obstacles facing independent directors during the meeting which hinder them from taking advantage of the board meeting and providing effective monitoring. This could be attributed to the underlying difficulties that face outside directors in reality and reduce their monitoring effectiveness. For example, outside directors on the board are at a significant disadvantage compared to managers in terms of the information they have about the firms (Williamson, 2007), particularly if the CEO holds the position of chairman on the board. This is because the CEO/chairman may be a full-time employee who has long service and participates in the firm's day-to-day management, enabling him to gain a broader knowledge of the firm (Lorsch Jay W. & Young, 1990). The CEO/chairman might control the board, and this control entails setting the board agenda, running the board meeting and controlling the amount and type of information disclosed to directors, as well as the discussion in the boardroom (Jensen, 1993). By contrast, most independent directors on the board are part-timers who hold directorship positions in other firms (Baird & Rasmussen, 2007) and only meet a few times a year (Lorsch Jay W. & Young, 1990). Given this circumstance, directors might not have sufficient time to investigate all the firm's issues that arise in the meetings; in this case, they might accept the management's justifications of the firm's problems, due to their limited knowledge and time for dealing with such complex issues (Lorsch Jay W. & Young, 1990).

Prior empirical studies provide evidence supporting the conflicting views regarding the effectiveness of the board meetings as discussed above. Thus, existing empirical results regarding the effectiveness of board meetings are mixed. For example, Habbash (2012) examined the effect of several internal governance mechanisms, including board meetings, on earnings management practices. Based on a sample of Saudi listed firms, the study found that the frequency of board meetings is not effective in reducing earnings management practices. Habbash (2012) interprets this result to mean that the board meeting might not be effective due to the limited time and knowledge that is available to the directors to enable them to deal with the firm's issues. Ebrahim (2007) observed a positive association between board meetings and earnings management practices in a sample of manufacturing firms in the US. Ebrahim (2007) interpreted this finding as indicating that the board tends to meet more frequently when the firm is experiencing failure in its performance. In contrast to Ebrahim's (2007) findings, Sáenz González and García-Meca (2014) observed that the more the board meets, the more effective it becomes in monitoring managerial practices, resulting

in a lower level of earnings management practices. Unlike this finding, Katmon and Farooque (2017) reported no significant effect of the board meetings on reducing earnings management practices, in a sample of UK listed firms.

Since the evidence regarding the effect of the board meeting on earnings management practices in developed and developing countries is not conclusive, this study aims to study this relationship in Saudi listed firms to provide evidence regarding the effectiveness of the board meeting in the Saudi context and to enhance the current understanding of the efficiency of this governance mechanism in developing countries.

2.2.6 Audit Committee Meetings

The audit committee is an essential component of the governance system in terms of constraining earnings management practices. The audit committee's role is to supervise the process of financial reporting, evaluate the firm's internal control systems, and ensure that the external auditor is capable of detecting any manipulation in financial reporting (Felo et al., 2005; Klein, 2002). Moreover, the audit committee is responsible for alleviating the agency problem between the firm and its outside shareholders by overseeing the financial reporting's integrity (Klein, 2002). According to Klein (2002), the audit committee fulfils its role by conducting frequent meetings with the internal financial managers and external auditors to review the firm's external audit procedures, financial statements, and internal control statutes. Therefore, prior studies (Katmon & Farooque, 2017; Klein, 2002; Alhossini et al., 2021) consider the audit committee meeting as a proxy for its level of activity. Alhossini et al. (2021), in this regard, state that researchers suppose that the more the audit committee meets, the more it becomes effective in monitoring the management practices. Hence, frequent audit meetings might contribute positively to improving the credibility of financial reporting (Alhossini et al., 2021).

Accordingly, by using the total number of audit committee meetings in the year to proxy for the audit committee's diligence, several studies examine the effect of audit committee meetings on earnings management practices. However, results were not conclusive; for example, Biao Xie et al. (2003) reported that audit committee meeting frequency is associated negatively with current discretionary accrual (a proxy of short-term earnings management). In contrast, several studies (Sharma & Kuang, 2014; Yang & Krishnan, 2005) did not find any association between the number of audit committee meetings and earnings management practices. Yet, unlike previous studies that use the number of annual audit committee meetings to proxy for the diligence of the audit committee, Qamhan et al. (2018)

use a new measure for this purpose, namely, the proportion of the attendance of audit committee members at meetings per year. The study examines the effect of audit committee members' attendance at audit meetings on constraining earnings management practices on a sample of Omani listed firms. The results reveal a negative and significant relationship between the proportion of audit committee members' attendance and earnings management practices. Regarding this finding, Qamhan et al. (2018) argue that attendance at meetings by audit committee members is an effective indicator with which to assess the diligence of the members. This measure indicates that active audit committee directors who dedicate their time to attending the meetings will be willing to provide an effective examination of the financial reports.

Unlike this result, Katmon & Farooque (2017) investigate the effect of several internal governance mechanisms, including audit meetings, on reducing earnings management practices, on a sample of UK listed companies. The study measures the audit committee meetings by using a dummy variable equal to 1 if the audit committee meets at least three times in the year or 0 otherwise. This measure is in line with the recommendations of the UK Corporate Governance Code (2010) and the Smith Report (2003). The study results show that audit committee meetings associate positively with earnings management practices, According to Katmon and Farooque (2017), the inefficiency of the audit committee meeting might attribute to the ineffectiveness of the board directors as the results show that they were also not effective in reducing earnings management practices in UK firms. The audit committee's efficiency relies largely on the effectiveness of the board of directors, thus it expected to be unable to provide effective monitoring in the absence of an effective board of directors. This is despite the fact that the boards of directors in Katmon and Farooque's (2017) study sample comply with the UK Corporate Governance Code (2010) and Smith Report (2003) recommendations in terms of their size, number of meetings and composition. Another reason might explain the inefficiency of the audit committee meeting in to Katmon and Farooque's, (2017) study is that ,independent directors on the audit committee might not be effective as they depend on the information provided to them by the management. Thus, it is expected that outside directors will be at a great disadvantage in terms of the information they have about the firms, compared to internal directors. Internal directors are also less likely to inform outside directors if they have been involved in earnings management practices. This, in turn, might make detecting such practices difficult for outside directors on the audit committee.

However, it noticed from the study reviewed above is that the evidence regarding the effect of audit meeting on earnings management practices in developed and developing countries is not conclusive. Hence, this study aims to study this relationship in Saudi listed firms to provide evidence regarding the effectiveness of the audit meeting in the Saudi context and to enhance the current understanding about the efficiency of this governance mechanism in developing countries.

2.2.7 Multiple directorship

Multiple directorship represents the situation when the directors hold several seats on other companies' boards (Haniffa & Hudaib, 2006). Multiple directorship/cross directorship is also referred to in the literature as interlocks (Jamaludin et al., 2015). This means that when individuals serve on other companies' boards, those companies are linked or interlocked with each other (Pombo & Gutiérrez, 2011). In addition, some scholars named members who serve on other companies' boards as busy directors (Jamaludin et al., 2015; Larcker & Tayan, 2011).

However, prior literature has debated whether or not the presence of members with multiple directorships increases the effectiveness of the board of directors. One stream of the literature argues that directors with multiple directorships will increase the effectiveness of the board. Fama and Jensen (1983) presume that markets for outside directorships provide an important motive for outside directors to develop their reputations as experts in management monitoring. This is because the likelihood of obtaining additional directorship positions depends on their performance in their home companies. The market, at the same time, values the performance and skills of the outside director and as a result rewards him/her with additional directorship positions and benefits. Empirically, Fich (2005) found that the appointment of CEOs as outside directors occurs when they have demonstrated good performance in their companies. In contrast, outside directors with poor performance are more likely to be disciplined by the market through loss of their directorship positions (Srinivasan & Richardson, 2005). In addition, according to Masulis and Mobbs (2011), executive directors with outside directorship seats play an important role on the board of directors for two reasons. (i) The labour market for outside directorships offers an incentive for executives appointed as outside directors to retain their jobs, given the enhanced reputation and career benefits that such a position offers. Therefore, directors will be more concerned to improve their companies' performance in order to protect their directorship positions. (ii) When executive directors serve on multiple companies' boards, their

managerial skills will be improved since their performance will be assessed broadly and based on different views, not merely by the CEOs of their own company. (iii) Executive directors with cross-directorships will be less likely to be influenced by CEOs because of the career independence they gain from being outside directors in other firms. (iv) They have specific firm knowledge and experience, which makes them a very important source of information for outside directors on the board.

Moreover, Chtourou et al. (2001) and Bédard et al. (2004) assume that the effectiveness of monitoring by directors with cross-directorship increases, since they have more governance experience and can obtain information about the best practice of boards of directors from different companies. Similarly, Haniffa and Hudaib (2006) indicate that directors with multiple directorship positions bring greater advantages to their firms because of their opportunities for exposure to the latest trends in monitoring strategies and different management strategies. Haniffa and Hudaib (2006) added that additional directorships for non-executive directors allow them to increase their understanding of their responsibilities. Hence, these factors will ultimately improve the performance of the companies they monitor.

Yet a number of studies claim that, rather than conferring such advantages, multiple directorships may negatively affect directors' performance. For instance, several authors argue that individuals with cross-directorship positions are more likely to allocate less time and effort to monitoring each company they serve (Beasley, 1996; Jian Zhou, 2004; Lipton & Lorsch, 1992; Lorsch Jay W. & Young, 1990). This obviously affects their performance, since monitoring the behaviour of top managers requires much time and effort (Morck et al., 1988). In addition, a large number of directorships held by directors may lead them to neglect the role of leadership of the board they serve; this results in directors engaging in rent-seeking behaviour, which means that the presence of such directors may not actually add any meaningful value to the board of directors (Jamaludin et al., 2015).

Moreover, the inherent limitations of the functioning of the board of directors in reality may also diminish the benefits of multiple directorships held by directors. As discussed by Davis (1993), in theory, the board of directors is elected by shareholders in order to defend their interests in the company. Agency theory in this regard suggests that the separation of owners and management in a modern organisation raises the need for such a board to act as a control mechanism over management (Jensen & Meckling, 1976). However, in practice, board members are elected by top managers, the board being usually nominated by the chairman who is the CEO of the company. Given that board members receive high levels of

compensation and bonuses, these factors collectively might cause the directors to become agents of the managers instead of the shareholders, since managers in practice appoint them (Davis, 1993; Lorsch Jay W. & Young, 1990). Empirically, Davis (1993) found that the appointment of outside directors was not determined by their performance in their own firms. Rather, the selection of outside directors on the board depended on their willingness to comply with managers' interests. analogously to "I scratch your back and you scratch my back". Thus, the evidence indicated that directors who were less likely to question the manager's actions in their own companies were more likely to obtain more directorship invitations from other companies. This view is supported by Morck et al. (1988), who argue that when the board is dominated by executives, outside directors in this case tend to avoid questioning poor decisions taken by managers. This is because directors recognise that such a practice may create a risk of losing their positions. Thus, Morck et al. (1988) suggest outside directors to hold shares in the company to ensure that they will be motivated to serve shareholders' interests, as they will have a personal interest in the firm.

In the debate on the effectiveness of multiple directorships, prior studies have examined whether multiple directorship has an effect on constraining earnings management practices. According to Alshetwi (2016), two theoretical hypotheses have been developed in the literature to explain the relationship between multiple directorship and earnings management practices; these are the reputation hypothesis and the "busyness" hypothesis. As discussed above, the reputation hypothesis implies that obtaining additional directorship positions depends on the performance and reputation of the directors (Fama & Jensen, 1983). Thus, directors in this case will be very sensitive about their reputation and will avoid anything that might damage it. In addition, directors will work hard to present themselves as good monitors, in order to obtain additional directorship positions (Fama & Jensen, 1983). Alshetwi (2016) suggests that this situation will lead to an increase in the effectiveness of monitoring by the directors and decrease the level of earnings management. On the other hand, the busyness hypothesis indicates that obtaining several directorships will decrease the effectiveness of the directors in monitoring the companies, since they will be too busy to serve each firm effectively. This situation may lead to a decrease in the ability of the directors to detect earnings management practices (Alshetwi, 2016). In line with these two hypotheses, previous studies have documented empirical evidence that supports both of them. Therefore, a review of these studies revealed that they have reached different conclusions regarding the effect of multiple directorships on earnings management practices. For example, Chtourou et al. (2001) examined the effect of non-executive competence on reducing earnings management practices. The competence of non-executive directors was

measured by the average number of the director's serving years and the average number of directorships held by the member. The results indicate that companies that have more competent non-executive directors sitting on their boards have the ability to constrain both income increasing and decreasing earnings management practices. This shows that multi-directorship positions increase the governance experience of non-executive directors as well as their awareness of firm-specific issues. In the same vein, Saleh et al. (2005) studied the relationship between multi-directorship and level of earnings management, based on a sample of 561 Malaysian listed firms in the year 2001. Their results demonstrate that the presence of directors with multi-directorships is only effective in constraining earnings management practices in companies that have negative unmanaged earnings[11]. In contrast, the presence of directors with multi-directorships has no effect in reducing earnings management practices in firms that have positive unmanaged earnings. firms that have negative unmanaged earnings it expected to have strong incentive to increase their reported earnings. They can increase their earnings through earnings management practices in order to avoid reporting losses. Saleh et al. (2005) state that the reason for the active role of directors with multi-directorships in these companies may lie in the risk of potential replacement of these directors when these companies experience losses. Therefore, directors will work hard to mitigate any earnings management attempts which may damage their reputation in the market for outside directors.

Additionally, Masulis and Mobbs (2011) provide evidence that firms that have inside directors with outside directorships have been associated with better performance , better market to book ratios, and rarely overstated their earnings. The study conducted a further analysis on a subsample of firms that had been found to misreport their earnings. It was found that companies that had inside directors with outside directorships had a lower level of manipulation. In addition, the study classified the earnings restatement into intentional and unintentional misstatement[12]; the study in this regard observed that firms that had inside directors with outside directorships had a lower tendency to misreport earnings deliberately. This study confirms that the significant effect of inside directors with outside directorships

[11] Unmanaged earnings measure as (reported earnings before tax and extraordinary items - discretionary accruals) negative unmanaged earnings means that the value of reported earnings is less than earnings management. It means that earnings management might be used to increase the earnings upward because the firm had experienced losses (Saleh et al., 2005). Positive unmanaged earnings means that the value of reported earnings is higher than the magnitude of earnings management. Hence earnings management might be used to increase the reporting earnings further.

[12] The study used Hennes et al.'s (2008) procedures to classify earnings restatement into intentional (irregularities) and unintentional misstatement (occurring due to error).

on constraining earnings misstatement practices can be explained by their motivation to retain a good reputation in the labour market. Obviously, such practice would damage their reputation and diminish their opportunities to receive additional directorship offers in the future. Likewise, the effectiveness of directors with multi-directorships in reducing earnings management practices was observed in the study conducted by Jian Zhou (2004).

Further, Bédard et al. (2004) examined the effect of the governance experience of independent audit committee members on constraining aggressive earnings management practices. Governance experience in this study was measured by the average number of directorships[13] held by independent directors who sat on the audit committee in the firms. The study utilised a sample of 300 US firms in the year 1996. Earnings management in this study was estimated by abnormal accrual based on Jones's (1991) model. The findings showed that the governance experience of audit committee members had been effective in reducing both income increasing and income decreasing earnings management practices. The study concluded that multiple directorship had provided audit committee members with the required knowledge and experience essential for monitoring management actions.

While these studies provided evidence regarding the effectiveness of directors with multiple directorship positions in constraining earnings management practices, Hashim and Abdul Rahman (2006) documented that the effectiveness of such multiple directorship does not hold when there is a very high number of directors with outside directorships on the board[14]. It was found that this situation decreased the quality of reported earnings in the companies. Other studies also found that multiple directorship had not been effective in improving the

[13]Previous studies measured directorship either by the number of members who held directorship positions (e.g. Hashim & Abdul Rahman, 2006) or by the number of directorship positions that each member held (e.g. Bédard et al., 2004).

[14]The maximum number of directorship seats that directors can hold without negatively affecting their monitoring was not clearly identified in the literature (Saleh, Iskandar, Rahmat et al., 2005). Nevertheless, prior studies have attempted to identify the cut-off point of directorship seats. For example, Hashim and Abdul Rahman (2006) revealed that when the number of interlocked directors on the board exceeded 75%, the presence of the interlocked directors in the board was associated negatively with earnings quality. Likewise, Beasley (1996) found that when directors hold more than two directorship seats in other firms, financial statement fraud is more likely to occur. However, certain corporate governance codes have made recommendations about the maximum number of directorships that directors can hold. For example, the Saudi Corporate Governance Code (2017) suggests that directors should not occupy more than five directorship seats in other listed companies at the same time. In addition, the UK Corporate Governance Code (2016) states that a full-time executive director should not hold more than one non-executive directorship.

quality of financial reporting. For example, Jamaludin et al. (2015) found that multiple directorship has no role in constraining earnings management practices in government-linked companies listed on the Malaysian stock exchange. The study used Kothari et al.'s (2005) model in order to estimate the absolute value of the discretionary accrual as proxy for earnings management. Moreover, Hasnan et al. (2013) observed that multiple directorship had led to an increase in incidents of fraudulent financial reporting, while Sahlan (2011) found a positive relationship between multiple directorship and earnings management practices. As discussed above, this might occur because too many multiple directorships may reduce the time and effort the director spends in monitoring management's performance and as a result reduce the effectiveness of board members in constraining earnings management practices. The ineffectiveness of the directors with multiple directorships also documented in the Saudi context as, Baatour et al. (2017) found that real earnings management practices are positively associated with multiple directorships. However, the study found no significant effect of multiple directorships on accrual-based earnings management in Saudi listed companies.

However, it noticed from the study reviewed above is that the evidence regarding the effect of multiple directorships on earnings management practices is not conclusive. Hence, this study aims to study this relationship to provide evidence regarding the effectiveness of the multiple directorships in the Saudi context and to enhance the current understanding about the efficiency of this governance mechanism.

2.2.8 Family members on the board

The impact of a family member on the board on earnings management practices can be explained by the context of alignment and entrenchment effects. The alignment effect hypothesis suggests that the interest of controlling family members is aligned with minority shareholders in the firm. Thus, they are less likely to expropriate the interests of minority shareholders through earnings management practices (Wang, 2006). According to the alignment effect hypothesis, the family member is less likely to be involved in earnings management practices because these practices might destroy the reputation of the family firm, their wealth and long term performance (Wang, 2006). Since family members sit on the boards of their firms (Ali et al., 2007), this, in turn, allows them to carry out superior direct monitoring of their managers' behaviour and spot any earnings management practices that the managers conduct (Prencipe & Bar-Yosef, 2011). These circumstances together will reduce in family firms the type I agency problem which arises from separation of ownership and management in firms (Ali et al., 2007). In contrast, the entrenchment hypothesis suggests that controlling family members are motivated to engage in opportunistic behaviour at the cost of minority shareholders; that is, to obtain private benefits that are not distributed to other minority shareholders (Wang, 2006; Shleifer & Vishny, 1997). The entrenchment hypothesis is in line with the agency problem type II which occurs due to the conflict of interests between controlling shareholders and minority shareholders in the firms, rather than between managers and owners (Setia-Atmaja et al., 2011; Jaggi et al., 2009). Since controlling family shareholders might control the board and the management of their firms, they might make decisions at the expense of less powerful shareholders by using their positions and privileged access to superior information (Ali et al., 2007; Al-Okaily et al., 2020). Hence, entrenched family owners might have the incentive to use earnings management practices to hide their acts of manipulation and prevent outside shareholders from uncovering the opportunistic practices (Chen et al., 2020).

To the researcher's knowledge, no study in the literature examines the direct effect of the presence of family members on the board on earnings management practices. Yet, there are several studies that examine the moderating effect of the presence of family members on the board on the relationship between individual corporate governance characteristics and earnings management practices (Jaggi & Leung, 2007; Abu Siam et al., 2018; Jaggi et al., 2009). For instance, Jaggi et al. (2009) examine the effect of the family-controlled board on the association between board independence and earnings management practices on a sample of listed firms in Hong Kong. The study divided the sample into two subsamples

based on the number of family members on the board. The first sample consisted of firms having two or more family members who were appointed as directors on the board (family-controlled board). The second subsample consisted of firms having fewer than two family members appointed to the board. The results show that board independence was not effective in reducing earnings management practices in firms that had boards dominated by family members. In contrast, board independence was effective in mitigating earnings management practices in firms that were not dominated by family members. Hence the study concluded that family control moderates the effectiveness of independent directors in curbing earnings management practices. In the same vein, by using a sample of manufacturing firms listed on the Amman Stock Exchange, Abu Siam et al. (2018) documented that audit committee members with financial expertise are less likely to reduce earnings management practices in firms that have boards dominated by family directors. Likewise, the negative consequences of the presence of family members on the board were reported by Jaggi and Leung (2007). The study investigates the effect of the presence of family members on the board on the association between the audit committee and earnings management practices. The study divided the full sample into two subsamples based on the number of family members on the board. One subsample includes firms that have more than two family members on the board. The other subsample consists of firms that do not have any family member on the board. The findings indicate that the audit committee was performing its task well in constraining earnings management practices in firms that had no family member on their board. However, in firms that had boards dominated by family members, the audit committee became ineffective in reducing earnings management practices. Jaggi and Leung (2007) argue that the presence of family members on the board reduces the independence of the audit committee. Consequently, the monitoring effectiveness of the audit committee is reduced.

The reviewed studies above show that the presence of family members on the board might weaken the monitoring effectiveness of the governance mechanism in the companies. Also, it can be noticed from the studies reviewed above that the literature lacks studies that examine the direct effect of the presence of family members on the board on earnings management practices. Hence, this study contributes to the literature by examining this association in the Saudi context to provide new evidence that enhances the current understanding of the effectiveness of family members on the board on constraining earnings management practices.

2.2.9 Government ownership

There is no agreement in the literature regarding the effect of government ownership on earnings management practices. Several studies (Guo & Ma, 2015; Gaio & Pinto, 2018; Chen et al., 2011) argue that the presence of government shareholders in firms might reduce the pressure on managers to manipulate reported earnings, due to several factors. First, the government ownership might give the firms several advantages such as access to the capital market, concessional financing, state-backed guarantees and tax benefits (Cheng et al., 2015; Gaio & Pinto, 2018), since, in fact, the government is the regulator and law enforcer in the country (Gaio & Pinto, 2018). Also, creditors might not require high-quality financial information from firms that have government ownership because these firms will be protected by the government (Gaio & Pinto, 2018). Second, government shareholders might have social and political goals in investing in firms, such as maintaining employment (Guo and Ma, 2015), which is inconsistent with the objective of maximising the firms' profit (Gaio & Pinto, 2018). Chen et al. (2011) argue that firms that have government ownership might appoint politically connected CEOs onto the firm. These CEOs will be appointed in order to help the government allocate the firms' resources towards achievement of political and social objectives (Chen et al., 2011). Thus, since the focus of the government shareholders is on political and social goals, the compensation contract for the CEOs in firms that have government ownership will place less weight on reported earnings than firms that do not have government shareholders and are focused more on profit-maximising objectives (Chen et al., 2011).

Unlike these views, other studies argue that government shareholders might increase managers' incentives to manipulate reported earnings (Wang & Yung, 2011; Gaio & Pinto, 2018; Ben-Nasr et al., 2015). For example, Wang and Yung (2011) argue that government firms might engage more in earnings management practices than non-governmental counterparts. This is because government firms are characterised by weak governance systems and poor firm efficiency due to bureaucratic interference by the government and lack of competition in the market. Wang and Yung (2011) added that there is a lack of strong and effective monitoring of managerial behaviour in government firms, because the monitoring tasks in these firms are usually performed by government officials who are, in fact, government agents. Hence, these circumstances might induce managers to engage in resources misallocations and to exercise their discretion in reporting financial information (Gaio & Pinto, 2018; Wang & Yung, 2011), particularly if there is no adequate discipline by the market or by the governance of the company (Wang & Yung, 2011). In line with this

argument, Ben-Nasr et al. (2015) argue that since the government firms have political objectives, the government, in this case, might be motivated to tunnel the resources of the firms into such objectives. Therefore, in order to hide these expropriations, the government might ask the managers to commit earnings management practices.

Several studies have examined empirically the effect of government ownership on constraining earnings management practices and the results are mixed. For example, Wang and Yung (2011) found that state-owned firms are involved less in earnings management practices compared to privately-owned firms in China. Wang and Yung (2011) explain this result by stating that government protection might reduce the pressure on managers to manipulate the reported earnings. In contrast, Gaio and Pinto (2018) studied the effect of state ownership on earnings management practices across public and private European firms. The study found that private state-owned firms have a lower level of earnings management practices than non-state private firms. These results are in line with the idea that the support and protection of the government may reduce the incentive of the managers to manipulate accounting information. However, these results do not hold for public state firms. The study provides evidence showing that the market pressure might encourage the managers of state-owned firms to manipulate reported earnings. Gaio and Pinto (2018) find that public state-owned firms have higher earnings management practices than non-state public firms. These findings indicate that market pressure has induced the managers of publicly traded government firms to manage earnings in order to meet certain earnings thresholds. On the other hand, Elghuweel et al. (2016) found that Omani listed firms which have government ownership tend to engage significantly less in earnings management practices compared to firms that do not have government ownership. Unlike this finding, Ben-Nasr et al. (2015) found that state ownership is associated with higher earnings management practices in a sample of international privatised firms. Ben-Nasr et al. (2015) argue that these findings are in line with the argument that managers tend to be involved in earnings management practices to hide the expropriations practised by government firms for political objectives. On the other hand, based on a sample of Chinese IPOs, Cheng et al. (2015) found that state firms have a lower level of income increasing earnings management practices than non-state firms around initial public offerings (IPOs). In addition, the study examined whether access to bank loans mediates the association between state ownership and earnings management for IPO firms, since the state-owned firms have advantages in gaining access to bank loans from state-owned banks. This easy access to debt means that the firm might depend less on equity for financing. As a result, state-owned firms are less likely to manage the earnings upwards in order to get high IPO prices. Earnings management might help the firm to secure

more capital from the equity market. The results show that the accessibility of bank loans explains 26.5% of the negative correlations between state ownership and earnings management in the IPO year. These results confirm that access to bank loans reduces the incentive of state-owned firms to inflate reported earnings in order to obtain high IPO prices.

Based on the studies reviewed above (Gaio & Pinto, 2018; Cheng et al., 2015; Elghuweel et al., 2016; Ben-Nasr et al., 2015; Wang & Yung, 2011), the evidence regarding the effect of state ownership in reducing earnings management practices is not conclusive. Also, most of the studies that examine the effect of government ownership focus on the Chinese market (Cheng et al., 2015; Wang & Yung, 2011). The generalisability of these research results on the Saudi market is problematic due to the numerous differences in institutional settings between China and Saudi Arabia[15]. Also, to the researcher's knowledge, no study in the literature examines the effect of government ownership in reducing earnings management practices in the Saudi market. Hence, the current study examines this association based on a sample of Saudi listed firms in order to contribute to the existing literature by providing new evidence regarding the effectiveness of the government ownership in constraining earnings management practices in Saudi listed firms.

2.2.10 Institutional ownership

Prior studies (Ramalingegowda et al., 2020; Bao & Lewellyn, 2017; Saleem Salem Alzoubi, 2016; Sáenz González & García-Meca, 2014; Bowen et al., 2008) argue that institutional shareholders are sophisticated users of financial statements and have the required resources to collect and analyse the information they need, which will enable them to perform effective monitoring activities and reduce the opportunistic behaviours of managers. Furthermore, institutional investors are better informed than other investors about the performance of the

[15] There are several institutional differences between the Saudi market and the Chinese market. For example, first, the Chinese legal system is established based on the Civil law that created in Germany and France (Shan, 2015), while the Saudi legal system, as well as its political, economic and social systems, are derived from Islam's traditions (Al-thuneibat, 2016). Second, since 1986, Saudi firms have applied local accounting standards that were originally adopted from the US (Hashed & Almaqtari, 2021). In 2017, Saudi firms started to adopt the International Financial Reporting Standard (IFRS) (Hashed & Almaqtari, 2021). By contrast, Chinese firms prepare their financial statements based on Chinese Generally Accepted Accounting Principles (GAAP), derived from the Chinese Accounting Law and Chinese Accounting Standards (Shan, 2015). Third, in China, the corporate governance code was derived from Chinese regulations (Shan, 2015), while the Saudi corporate governance code primarily derives from the UK governance code (Al-Bassam et al., 2015).

companies due to their professionalism, experience, and available resources. These factors together will enhance their monitoring (Lassoued et al., 2018).

From the agency theory perspective, the separation between ownership and control in a modern corporation gives rise to agency cost due to the conflict of interest between shareholders and managers (Jensen & Meckling, 1976). This cost becomes more expensive for diffuse shareholders as it is more difficult for them to monitor the managers (Koh, 2003). Yet, due to the concentration of institutional ownership in a small number of shareholders, the collective action of institutional investors become less costly. As they are a small number of shareholders, they can easily form a homogeneous group (Koh, 2003). This, in turn, will enable them to undertake the monitoring role and share the monitoring expense as well. Furthermore, the high percentage of shares that they hold gives them a further incentive to monitor the practices of the managers (Koh, 2003).

Apart from agency theory, Koh (2003) states that two competing theoretical arguments in the literature might explain the effect of institutional ownership on earnings management practices. One argument suggests that institutional investors are transient investors who are short-term orientated, with a focus on current earnings. Such investors are more likely to induce the managers to manage the earnings upwards in order to increase the share price. The other argument suggests that as institutional ownership increases in the firms, the option of exiting from the firms becomes costly for institutional investors. This is because selling a large block of shares results in a discount on the share price. Thus, due to the high financial value associated with these large shareholdings, institutional investors will be motivated to engage in monitoring and governing the firms, as they will incur substantial loss if firms perform poorly in the market. As a result, institutional investors will become long-term orientated and motivated to limit managerial opportunistic behaviours in the firms. Since institutional investors focus on long-term objectives, this might reduce their incentive to participate in short-term earnings manipulation.

Due to the possible monitoring advantages of institutional investors, prior studies have examined their impact on earnings management practices (Sáenz González & García-Meca, 2014; Alzoubi, 2016; Pucheta-Martínez & García-Meca, 2014). A review of these studies shows that the evidence regarding the effect of institutional investors on reducing earnings management practices is mixed. For example, Alzoubi (2016) examined the effect of several ownership types, including institutional ownership, on earnings management practices. Using a sample of 62 Jordanian firms, Alzoubi (2016) concluded that institutional ownership

has a significant impact in reducing the magnitude of discretionary accrual (earnings management practices). Likewise, Pucheta-Martínez and García-Meca (2014) utilised a sample of non-financial firms listed on the Spanish Stock Exchange and found that directors appointed by institutional investors who sit on the board or the audit committee significantly improve the quality of financial reporting, since their participation on the board decreases the probability of the auditor issuing qualified audit reports. Unlike the case of institutional directors, the study found that the presence of independent directors on the board was not associated with enhancement of the quality of financial reporting. These results indicate that institutional investors on the board have a much stronger impact than independent directors on demanding high quality financial information (Pucheta-Martínez & García-Meca, 2014). In contrast to these results that support the effectiveness of institutional investors, Sáenz González and García-Meca (2014) did not find any significant impact of institutional ownership on constraining earnings management practices on a sample of listed Latin American firms.

Other studies in the literature have found that the level of institutional ownership might determine their monitoring effectiveness in constraining earnings manipulation. For instance, Koh (2003) examined the effect of institutional ownership on constraining income increasing earnings management practices in a sample of non-financial Australian firms, and reported that there was a non-linear relationship between institutional ownership and income-increasing earnings management. Specifically, at low levels of institutional ownership (less than 54.3%), the study documented a positive association between institutional ownership and income-increasing earnings management. This result is in line with the stated argument that transient (short-term oriented) institutional investors induce managers to manipulate earnings upwards. In contrast, institutional ownership was negatively associated with income-increasing earnings management at a high level of institutional ownership (higher than 54.3%). These results are consistent with the argument that monitoring by long-term oriented institutional investors restricts the managers' opportunity to manipulate earnings. In this regard, Koh (2003) argues that at a low level of institutional ownership, institutional investors become short-term oriented and trade on current news; thus they might induce managers to manipulate earnings upwards. In addition, they would not be interested in conducting costly monitoring in firms since the exit option is a more feasible solution for them if the firms perform poorly. This might facilitate the managers' opportunity to manipulate the earnings. However, when institutional investors own a large percentage of shares in the firms, the exit option becomes expensive for them. Hence, they would be motivated to conduct effective monitoring activities.

Other studies find that local institutional factors might determine the effectiveness of institutional investors in reducing earnings management practices. For example, Bao and Lewellyn (2017) investigated the direct influence of firm-level ownership on earnings management practices in a sample of 1200 listed firms in 24 emerging markets. Also, the study examines the interaction of ownership structure with local institutional factors and its effect in mitigating earnings management practices. By examining the direct effect of institutional ownership on earnings management practices, the study failed to find any significant association between them. However, the study documented that the regulatory quality strengthened the negative relationship between institutional ownership and earnings management practices. Bao and Lewellyn (2017) interpret this result by stating that high regulatory enforcement in the country facilitates the monitoring process of institutional investors and helps them exert their power in supervising the quality of financial statements.

However, other studies reported that the type of institutional investors might determine the effort exerted in monitoring the managerial behaviours in the firms. For example, by utilising a sample of Korean listed firms, Liu et al. (2018) documented empirically that institutional blockholders perform an effective monitoring task and reduce earnings management practices. Liu et al. (2018) argue that institutional blockholders are effective monitors in the firms because they hold large stakes in them and have both the incentive and the financial ability to incur the high cost of monitoring. Also, as institutional blockholders hold a significant number of shares in the firms, they are less likely to liquidate their shares. Hence, institutional blockholders, in this case, will become long-term investors who will gain the benefits of monitoring their firms. In addition, the study separates institutional blockholdings into those owned by domestic and by foreign institutional investors. The results indicate that domestic institutional investors are effective in constraining earnings management practices. Contrary to this, foreign institutional investors significantly increase earnings management practices. In this regard, Liu et al. (2018) argue that a possible interpretation of these results is that domestic institutional investors reduce earnings management practices effectively because of being closer to the firms geographically. This, in turn, will facilitate their negotiations with the managers and give them easy access to the firms' operational facilities. Besides this, domestic institutional investors are better acquainted with local regulations, accounting standards, the local language, firm culture, and business model of the firms. These factors together might give the domestic institutional investors an advantage in reducing their monitoring cost and facilitate their discovery of earnings manipulations. However, foreign institutional investors are transient investors who focus on the short term

and trade on the news related to earnings. This might make them motivated to inflate the reported earnings.

As mentioned above, the evidence regarding the effectiveness of the institutional investors in reducing earnings management practices is not conclusive. Several reasons might contribute to the divergences in the results. First, the majority of prior studies consider institutional investors as a homogeneous group in terms of their monitoring effectiveness (Sáenz González & García-Meca, 2014; Alzoubi, 2016; Pucheta-Martínez & García-Meca, 2014; Bao and Lewellyn, 2017). This assumption might not be accurate since Liu et al. (2018) show that domestic institutional investors are more effective than foreign institutional investors in mitigating earnings management practices. Second, the differences in the institutional factors of countries might facilitate or hinder the monitoring process of institutional investors. In this regard, Bao and Lewellyn (2017) found that strong regulatory enforcement in the country facilitates the monitoring process of institutional investors and helps them exert their power in supervising the quality of the financial statements. Third, the level of participation of institutional ownership might affect their monitoring effectiveness in constraining earnings management practices. For example, Koh (2003) found that at the low level of institutional ownership, institutional investors become short-term oriented and trade on current news; hence they might induce managers to manipulate earnings upwards. In contrast, when institutional investors own a large percentage of shares in the firms, the exit option becomes expensive for them. Hence, they would be motivated to conduct effective monitoring activities.

2.2.11 Family ownership

Prior studies explain the relationship between family ownership and earnings management through the use of two competing frameworks: the alignment and entrenchment effects (Bonacchi et al., 2018; Yang, 2010; Chen et al., 2020; Ali et al., 2007; Wang, 2006). The alignment effect hypothesis suggests that the interests of family shareholders are aligned with those of minority shareholders. Thus, they are less likely to expropriate the interests of minority shareholders through earnings management practices (Wang, 2006). According to the alignment effect, the family owner is less likely to be involved in earnings management practices because these practices might destroy the reputation of the family firm, their wealth and long-term performance (Wang, 2006). In contrast, the entrenchment hypothesis suggests that controlling family ownership have a motivation to engage in opportunistic behaviour at the cost of minority shareholders by obtaining private benefits that are not distributed to

other minority shareholders (Wang, 2006; Shleifer & Vishny, 1997). The entrenchment hypothesis is in line with the agency problem type II which occurs due to the conflict of interests between controlling shareholders and minority shareholders in the firms, rather than between managers and owners (Setia-Atmaja et al., 2011; Jaggi et al., 2009). Since controlling family shareholders might control the board and the management of their firms, they might make decisions at the expense of less powerful shareholders by using their positions and privileged access to superior information (Ali et al., 2007; Al-Okaily et al., 2020). Hence, entrenched family owners might have an incentive to use earnings management practices to hide their manipulations and prevent outside shareholders from uncovering their opportunistic practices (Chen et al., 2020).

Previous studies (Bonacchi et al., 2018; Yang, 2010; Chen et al., 2020; Ali et al., 2007; Wang, 2006) provide empirical evidence that supports both hypotheses. For example, Wang (2006) empirically confirmed the alignment effect in his study by examining the impact of several measures of family ownership on earnings management practices. The study documented that founding family ownership increases the quality of earnings significantly among Fortune 500 firms. Likewise, Ali et al. (2007) observed that family firms have higher earnings quality than non-family firms. The study also found that earnings of family firms are effective in forecasting future cash flow, have greater persistence and are correlated with current firms' returns. Alzoubi (2016) observed that the increase in family ownership is associated with lower earnings management practices on a sample of 62 firms listed on the Amman Stock Exchange.

In contrast to these findings that support the alignment effect, several studies in the literature report empirical evidence showing that family ownership is not effective in reducing earnings management practices. These results support the entrenchment effect hypothesis for family firms (Bonacchi et al., 2018; Yang, 2010; Chen et al., 2020). For instance, Bonacchi et al. (2018) examined whether family listed firms manage earnings through their non-listed subsidiaries. Based on a sample of 644 Italian family listed firms and their non-listed subsidiaries between the years 2003 and 2014, the study reported that family firms engage in earnings management practices more than non-family firms. The study found that listed family firms manage their earnings through non-listed subsidiaries in order to avoid reporting losses in their financial reports. Similarly, Alhebri and Al-Duais (2020) investigated the practices of accrual earnings management and real earnings management among a sample of non-financial Saudi listed firms. The study found that the presence of family ownership in the firms significantly increased the practices of both accrual earnings

management and real earnings management. Alhebri and Al-Duais (2020) attributed this finding to the nature of the institutional environment of Saudi Arabia, which is characterised by a weak regulatory system and inferior corporate governance. In line with this argument, other studies (Chen et al., 2020; Chi et al., 2015) found that weak/strong governance systems facilitate/prevent the entrenchment practices of family firms. For example, Chen et al. (2020) examined whether family firms in the US took advantage of the weakness of the internal control system in order to conduct accounting manipulation. The study also examined whether the SOX 404 [16], the public disclosure requirements related to internal control effectiveness, reduced these practices in family firms. Chen et al. (2020) found that in the years before the introduction of SOX 404, family firms that had weak internal control systems tended to engage more in entrenchment activities such as misstatements, frauds, and related party transactions than non-family firms. However, in the year of adoption of the internal control disclosure, family firms reported fewer misstatement cases. This means that the adoption of the SOX 404 has improved the internal control system in family firms, which helps in mitigating their entrenchment practices. Likewise, Chi et al. (2015) empirically found that the presence of an effective board of directors in family firms reduces significantly their engagement in earnings management practices. Hence, effective corporate governance might alleviate the entrenchment effect in family firms. The study used a sample of listed high technology firms in Taiwan.

It is worth mentioning that a family firm is more likely to suffer from an agency problem that differs from an those encountered by non-family firms. Since ownership tends to be concentrated in family firms, this, in turn, creates two types of groups of shareholders, majority and minority shareholders (Jaggi et al., 2009). Given the presence of these two groups, family firms tend to face type II agency problem (conflict of interest between majority and minority shareholders) than type I agency problem (conflict of interests between managers and shareholders) (Jaggi et al., 2009).

Although previous studies examined the effect of family ownership on constraining earnings management practices in emerging and developed markets (e.g., Ali et al., 2007 in the US; Alzoubi, 2016 in Jordan; Chi et al., 2015 in Taiwan), these results might not be generalised to the context of the Saudi market due to differences in the institutional environment. Saudi Arabia is a developing country and has concentrated ownership structure in the hands of the

[16] Public firms in the US are required to perform SOX 404 top-down risk assessment (TDRA), which is a financial risk assessment for their internal control. This assessment is performed by the firm in order to comply with section 404 of the Sarbanes-Oxley Act of 2002 (SOX 404).

family (Alhebri & Al-Duais, 2020). Its capital market is not well developed; firms use local accounting standards and suffer from a weak regulatory system (Habbash & Alghamdi, 2016). These institutional factors might make the firms depend less on the corporate governance system to protect the interests of shareholders. For example, the board of directors in firms that have controlling shareholders might not be effective as the board of firms with no controlling shareholders due to the influence of the controlling shareholders on the board (Cuervo, 2002). Since ,Controlling shareholders can reduce the effectiveness of the board by becoming involved in the selection of the independent directors (Habbash, 2013; Guthrie & Sokolowsky, 2010). Those directors will act based on the interests of the controlling shareholders rather than the interests of minority shareholders (Bouvatier et al., 2014). Also, such directors will be less likely to question the practices of the controlling shareholders since their reappointment might depend on the discretion of controlling shareholders (Jaggi et al., 2009). Thus, firms in developing countries might depend on controlling shareholders for monitoring of managerial practices rather than depending on board of directors. This, in turn, might make the controlling family owner effective in reducing earnings management practices in their firms. In this regard, Mengoli et al. (2020) observed that family firms in countries that have weak regulations and financial systems (insider-oriented countries) have higher earnings quality than non-family firms. These findings indicate that family ownership in the firms can act as a substitute for the weak regulations and weak market in insider-oriented countries[17].

However, this study will contribute to the literature by examining the effect of family ownership on earnings management practices in the Saudi context. To the researcher's knowledge, there is only one study in the literature that examines the effect of family ownership on earnings management practices in the Saudi market (Alhebri & Al-Duais, 2020). However, Alhebri and Al-Duais' (2020) study suffers from some limitations that will be addressed by the current study. First, Alhebri and Al-Duais' (2020) study used a small sample, consisting of 106 non-financial Saudi listed firms during the years from 2014 to 2018, which yielded 530 firm-year observations. Second, Alhebri and Al-Duais' (2020) study estimated accrual earnings management by using only the long-term earnings management model, without estimating short-term earnings management model. Hence, the current study differs from Alhebri and Al-Duais' (2020) study in several ways. First, the

[17] Insider-oriented countries are characterised by concentrated blockholders ownership, long-term debt financing, weak shareholders/creditors rights and protection, weak enforcement, and the absence of a developed and active market for corporate control (Mengoli et al., 2020; Aguilera & Jackson, 2010).

current study will use a wider sample range, which covers 112 non-financial Saudi listed firms from the 2006 to 2017 (994 firm-year observations). Second, the study examines the effect of family ownership on both long- and short-term earnings management practices. The long-term earnings management model is estimated by the use of the Modified Jones Model (1995) and the Kothari (2005) model. The short-term earnings management model is estimated by computing the discretionary working capital accrual of the Modified Jones Model (1995). In addition, the study contributes to the literature by examining the effectiveness of family ownership in the Saudi context, which is expected to suffer from severe type II agency problems due to the concentration of family ownership and the weakness of the country's regulatory and governance system (Alhebri & Al-Duais, 2020).

2.2.12 Blockholders ownership

From the agency theory point of view, the separation of ownership and control in the modern corporation gives rise to the conflict of interests between shareholders and managers (Jensen & Meckling, 1976). In this type of firm, managers (the agent) run the firm and act on behalf of the shareholders (the principal) who constitute the genuine owner of the firm (Jensen & Meckling, 1976). The fundamental issue in the modern corporation is that when shareholders become broadly diffused, it is economically less beneficial for any particular shareholder to bear substantial monitoring costs, as they will obtain a limited portion of the benefits of monitoring (Dou et al., 2018). Hence, firms with widespread ownership may suffer from the free-rider problem, since small shareholders will lack the capability and the motivation to effectively monitor managerial practices (Dou et al., 2018).

Yet, several studies (Shleifer & Vishny, 1997; Dou et al., 2018; Claessens et al., 2002; Shleifer & Vishny, 1986) argue that the presence of blockholders in the firms can ease the principal-agent problem inherent in a modern corporation, which is the conflict of interest between shareholders and managers. This is because ownership concentration gives the blockholders effective control of the company through their voting rights (Shleifer & Vishny, 1997). For example, they can replace underperforming managers (Shleifer & Vishny, 1986). Also, they can influence several important decisions in the company, such as executive pay and investment. Besides this, Claessens et al. (2002) state that, as blockholders own a large stake in the firms, they are motivated to increase the firms' value. They are also able to collect information and effectively monitor managerial practices. However, this study defines blockholders as individual shareholders who own more than 5% of the firm's total shares.

This 5% is selected in this study to define blockholders for two reasons. First, this level triggers the disclosure requirements in Saudi Arabia. Thus, firms should disclose the names and the percentage of their shareholders if their ownership reached 5% of the firm's shares. Second, most prior studies define blockholders as shareholders who own at least 5% of the firms' shares (Guthrie & Sokolowsky, 2010; Dou et al., 2016; Edmans, 2014; Alzoubi, 2016). In this regard, Edmans (2014) states that there is no widely accepted definition of blockholders. However, his theoretical models suggest that blockholders' monitoring constantly rises as block size increases (up to a certain point) and is not limited to 5% (Edmans, 2014).

According to Edmans (2014), it can be argued that holding 5% of the firms' shares might motivate the blockholders to engage in costly actions and monitor the managers. Edmans (2014) states that blockholders who own at least 5% of the firms' shares in large firms would be expected to have strong monitoring incentives, because holding a small percentage block in a large firm might indicate a significant dollar block. Yet, although the blockholders' voting right and ability to intervene in the firms may depend on their block size, the stake required to secure an effective level of control in the firm varies between firms and is not limited to 5% (Edmans, 2014). Also, securing effective control in the firm might depend on other factors (rather than the block size of the shareholders) such as the stake held by other blockholders and by management (Edmans, 2014). Moreover, factors such as the effectiveness of the legal protection of shareholders' voting rights in the country might affect blockholders' ability to govern and exercise their voting right as a powerful large shareholder group in the companies (Shleifer & Vishny, 1997).

However, based on the above discussion, in Saudi firms, it is expected that individuals who hold at least 5 % of the firm's shares might have the incentive to take costly action to intervene in the company and monitor the management. This is because the firms in the study sample are large listed firms, which means that the small percentage of shares might reflect significant share value (Edmans, 2014). Second, according to the 2017 Saudi Corporate Governance Code, shareholders who own at least 5% of the firm's shares have the ability to add to the General Assembly's agenda topics which they would like to have discussed at the meetings. Also, those shareholders can submit a request to the board of directors to invite the Ordinary General Assembly to convene; hence, it is expected that blockholders who own 5% of the firm's share might have the ability to influence the firm's decisions in Saudi listed firms.

In line with the argument that supports the effectiveness of blockholders in the firms, Dou et al. (2018) argue that blockholders can exercise governance by threatening to sell their stocks (exit from the firm) when managers perform poorly. When blockholders exit the firms, this action will send a reliable signal to the market that the firms have lower firm value; consequently, the stock price will decrease. To the extent that the managers' wealth is related to the firm's share price, the managers will be motivated to align their activities with the interests of the blockholders to prevent them from exiting the firm. This is because the decline of the share price will affect the managers' personal wealth, and they will be incurring losses from the blockholders' exit. Hence, managers will be motivated to pursue activities aimed at increasing the firm's value rather than practices that bring them private benefits and will be less likely to manipulate reported earnings. Based on the above discussion, the presence of blockholders in the firms might diminish both the agency problem and the free-rider problem inherent in firms with diffused ownership structure (Shleifer & Vishny, 1986).

In the same vein, it has been argued in the literature that the presence of blockholders in the firms might mitigate managers' incentives to practise earnings management. In this regard, Dou et al. (2016) discuss several mechanisms with which blockholders can influence earnings management practices in the companies. First, blockholders can directly interfere in the firms' investment, operating, financing and governance decisions. This intervention can be accomplished by obtaining seats on the board or on the management team using proxy solicitations. Second, blockholders can communicate and discuss the firms' matters directly with the managers. Third, blockholders can adopt several forms of activism to affect the firms' decisions, such as submitting shareholders' proposals, launching public criticism, or bringing class action lawsuits and proxy contests. According to Dou et al. (2018), the intervention of the blockholders in this way might limit the managers' opportunity to practise earnings management, as they cannot conceal these practices from the blockholders. Also, they might face the threat of being replaced as a result of such practices (Shleifer & Vishny, 1986). Hence, the presence of blockholders in the firms might align the interests of managers with those of the shareholders and improve the quality of the reported earnings (Dou et al., 2016).

However, based on the arguments discussed above, several studies provide empirical evidence that supports the effectiveness of blockholders in constraining earnings management practices. For example, Dou et al. (2018) provide empirical evidence for their argument that blockholders exercise governance through exit threats. Dou et al. (2018)

documented that financial reporting quality improves when the blockholders' threat to exit the firms increases. The study also finds that this relationship becomes more pronounced when the wealth of managers is likely to be affected by the share price of the firms. Likewise, Lai and Tam (2017) documented that Chinese listed firms with a high percentage of blockholders are less likely to manipulate earnings to meet financial regulatory thresholds. Furthermore, the effectiveness of the presence of blockholders is also documented by Alzoubi's (2016) study. Alzoubi (2016) examined the effect of several ownership types, including blockholders, on earnings management practices. Using a sample of 62 Jordanian firms, Alzoubi (2016) concluded that blockholders' ownership provides effective monitoring functions, and significantly reduces the magnitude of discretionary accrual (earnings management practices).

Despite the advantages of the blockholders in the firms, agency theory has suggested that the presence of concentrated ownership in the firms gives rise to type II agency problem which occurs due to the conflict of interest between controlling and minority shareholders (Claessens & Fan, 2002). This conflict of interest might encourage controlling shareholders to persuade the managers of their firms to engage in earnings management practices at the expense of minority shareholders (Claessens & Fan, 2002). The blockholders obtain substantial control over the managers due to the substantial number of shares they hold in the firm, which allows them to secure voting control (Shleifer & Vishny, 1986). In this regard, Shleifer and Vishny (1997, p. 759) argue that "as ownership gets beyond a certain point, large owners gain nearly full control of the company and are wealthy enough to prefer to use firms to generate private benefits of control that are not shared by minority shareholders".

However, such control might facilitate the opportunistic behaviours of the blockholders. This is because blockholders can control production of the accounting information and the accounting reporting policies (Fan & Wong, 2002). This, in turn, allows them to influence the managers to report accounting information that serves the blockholders' interests rather than information that reflects the true performance of the companies (Fan & Wong, 2002). For example, if the opportunistic behaviour of the blockholders results in decreasing the actual earnings of the companies, blockholders have the incentive to influence the managers to manage the earnings upwards in order to conceal their manipulations (Ding et al., 2007). In this case, earnings management practices might be used to hide the expropriation of the firms' resources by large shareholders (DeAngelo & DeAngelo, 2000; Ali et al., 2007).

Furthermore, due to their effective control over the firm, blockholders can be entrenched, inasmuch as the board will not criticise their decisions which go against the interests of minority shareholders. This is because blockholders can elect directors to the board or influence the nominations of directors (Habbash, 2013; Guthrie & Sokolowsky, 2010). Those directors elected by the blockholders will act based on the interests of the controlling shareholders (Bouvatier et al., 2014). Also, they will be less likely to question the practices of the controlling shareholders since their reappointment might depend on their discretion (Jaggi et al., 2009). Thus, the governance system of firms that have blockholders is more likely to be weak (Lassoued et al., 2018). This, in turn, might encourage the blockholders to influence the managers to manipulate the reported earnings since they are less likely to encounter any resistance from the company's board of directors (Lassoued et al., 2018).

Based on this argument, several studies have documented the ineffectiveness of blockholders in constraining earnings management practices. For example, Jiang et al. (2020) found that firms having multiple blockholders engage more in earnings management practices than firms having single controlling shareholders. Jiang et al. (2020) interpret this finding by stating that the presence of other blockholders in the firms may decrease the possible cost of earnings management which might be incurred by single controlling shareholders. This might motivate blockholders to influence the managers to practise earnings management. However, the study finds that in firms that have better internal governance and greater external monitoring, the positive association between multiple blockholders and earnings management practices becomes less prominent. This is because in firms with effective governance and monitoring systems, earnings management practices are more likely to be observed by other insiders, outside shareholders and regulators. Hence, such a factor might decrease the motivation of blockholders to influence the managers to manipulate reported earnings (Jiang et al., 2020). Similarly, based on a sample of US firms, Guthrie and Sokolowsky (2010) found that firms that have blockholders inflate the earnings around seasoned equity offerings. Likewise, Peasnell et al. (2005) documented that blockholder ownership has a positive but insignificant effect on earnings management practices in UK firms.

The studies reviewed above show that the evidence of the relationship between large shareholders and earnings management is mixed. This could be attributed to three causes. First, Dou et al. (2016) argue that one plausible explanation of the mixed findings obtained by prior studies is that these studies consider blockholders as a homogeneous group of investors. However, blockholders will most likely have different skills, interests and

experience, which will impact differently on the way they monitor the firms (Dou et al., 2016). Second, the institutional factors of the countries might determine the effectiveness of the blockholders in the firms. In this regard, Shleifer and Vishny (1997) argue that the ability of blockholders to govern and exercise their voting right as a powerful large shareholder might depend on the degree of legal protection of the shareholders' voting right in their country. Third, the degree of strength of the governance system in the firms might help in mitigating/encouraging blockholders to engage in opportunistic behaviours. For example, Jiang et al. (2020) documented that multiple blockholders are less likely to become involved in earnings management practices in firms that have strong internal governance and effective external monitoring systems.

Despite the mixed results discussed above, to the researcher's knowledge, no study in the literature studied the effect of stockholders' ownership in reducing earnings management practices in the Saudi context. Hence, the current study examines this association based on a sample of Saudi listed firms to contribute to the existing literature by providing new evidence regarding the effectiveness of blockholders' ownership in constraining earnings management practices in Saudi listed firms.

2.2.13 The role of family ownership in the association between corporate governance mechanism and earnings management practices

The role of family ownership in the association between corporate governance mechanism and earnings management practices can be explained by the alignment and entrenchment hypotheses. The alignment effect hypothesis suggests that the interest of family shareholders is aligned with minority shareholders. Thus, they are less likely to expropriate the interests of minority shareholders through earnings management practices (Wang, 2006). Based on the alignment effect hypothesis, several factors might explain why family firms engage less in earnings management practices. First, the family owner is less likely to be involved in these practices because they might destroy the reputation of the family firm, their wealth and long-term performance (Wang, 2006). This is because family shareholders usually have a high ownership stake in the firm, which means that their cash flow right is high as well. If the practices of earnings management become public knowledge to the market, outside shareholders might discount the share price correspondingly (Ali et al., 2007; Gomes, 2000). As a result, family shareholders might incur significant costs due to the decrease in the value of their equity (Ali et al., 2007). Hence, it will cost the controlling shareholders more if they

manipulate the wealth of the firm for their own private benefit (Gomes, 2000). Second, family ownership is motivated to monitor managers' behaviour and reduce their opportunities to engage in earnings management practices, because family owners see their firms as a valuable asset; thus they are interested in preserving the family legacy for the forthcoming generations to whom they will pass on the firm (Boubaker et al., 2013). Third, family shareholders often focus on long-term objectives in their firms. Thus managers of family firms might not be motivated to engage in earnings management practices, as they face less pressure to meet short-term earnings objectives (Jaggi et al., 2009). Fourth, due to the high percentage of shares they own in their firms, family shareholders might participate in the management or the board of the firms and have good knowledge of their business (Ali et al., 2007; Prencipe & Bar-Yosef, 2011; Anderson & Reeb, 2003). This enables them to maintain superior monitoring of their managers and spot any earnings management practices conducted by those managers (Prencipe & Bar-Yosef, 2011). For example, as family shareholders participate in the management of the firms, they have a better understanding of how the business is conducted. Also, they form good relationships with their suppliers and customers (Ali et al., 2007). Hence, they will be able to effectively discover it if the managers inflate the firm's revenues by shipping goods earlier than they should, or make an unjustified cut to any discretionary expenditures (Ali et al., 2007). Therefore, family owners have the capacity and the incentive to monitor managerial behaviour directly and reduce the managers' opportunities to engage in earnings management practices (Yang, 2010; Prencipe & Bar-Yosef, 2011). This, in turn, will reduce type I agency problem in family firms which arises from the separation of ownership and management in the firms (Ali et al., 2007).

On the other hand, the entrenchment hypothesis suggests that controlling family owners are motivated to engage in opportunistic behaviour at the expense of minority shareholders in order to obtain private benefits that are not distributed to other minority shareholders (Wang, 2006; Shleifer & Vishny, 1997). The entrenchment hypothesis is in line with the agency problem type II which occurs due to the conflict of interests between controlling shareholders and minority shareholders in the firms, rather than between managers and owners (Setia-Atmaja et al., 2011; Jaggi et al., 2009). Since controlling family shareholders might control the board and the management of their firms, they might make decisions at the expense of less powerful shareholders by using their positions and privileged access to superior information (Ali et al., 2007; Al-Okaily et al., 2020). Hence, entrenched family owners might have the incentive to use earnings management practices to hide their manipulations and prevent outside shareholders from uncovering these opportunistic practices (Chen et al., 2020). For example, they might exploit the assets of the firms through

purchasing services and goods for personal purposes on the company account (Chen et al., 2020). In addition, family owners might reduce the credibility of the accounting information that is communicated to the users of the annual reports (minority shareholders among them) (Fan & Wong, 2002). Since controlling shareholders own a majority of the shares in the company, they might have the ability to control the production of the accounting information and the reporting policies (Fan & Wong, 2002). This, in turn, enables them to report accounting information based on their own interests rather than accounting information that reflects the underlying financial performance of the firm (Fan & Wong, 2002). Prior studies document that family firms do engage in earnings management practices. These results support the entrenchment effect hypothesis in relation to family firms (Bonacchi et al., 2018; Yang, 2010; Chen et al., 2020). For instance, DeAngelo and DeAngelo (2000) documented that the managers of the Time Mirror Company in 1994 used real earnings management practice in order to reduce the dividends paid to other shareholders in the firm. At the same time, they offered high dividends to the Chandler family who owned the firm. This practice arose because the pay-out policy of the firm was affected by the preferences of the Chandler family. Bonacchi et al. (2018) found that listed family firms manage their earnings through non-listed subsidiaries in order to avoid reporting losses in their financial reports. Chen et al. (2020) documented that family firms with weak internal control systems tend to engage more than non-family firms in entrenchment activities which are misstatements, frauds, and related party transactions.

Furthermore, Since family owners own a significant number of shares in their firms, this gives them substantial power to control the firm (Ali et al., 2007). According to Chen et al. (2020), family owners might influence the board of directors, management and the employees of the firm. This influence might reduce the effectiveness of the governance mechanism in limiting the entrenchment practices of the family owners. For example, the family owner can influence the process of selecting and nominating the independent directors on the board (Jaggi et al., 2009; Al-Okaily et al., 2020). As a result, those independent directors will be less objective and independent because their appointment and reappointments on the board might depend on the discretion of controlling family members (Bao & Lewellyn, 2017). In line with this argument, Eng et al. (2019) argue that the independent directors in family firms might be less likely to question and challenge the practices of the controlling family, particularly if the family members sit on the board as directors or executive members (Prencipe & Bar-Yosef, 2011). In addition, directors of the family firms might have an implicit relationship with the controlling families in the firms (Prencipe & Bar-Yosef, 2011). Thus, their independence is likely to be compromised.

Hence, the lack of independence of the directors and the familiarity of the directors with the controlling family might give rise to the risk of collusion between the controlling families and the board members (Prencipe & Bar-Yosef, 2011). This, in turn, will reduce the effectiveness of the board in monitoring the decisions that have been taken by the family owners in relation to accounting policies such as earnings management practices (Prencipe & Bar-Yosef, 2011).

Based on the above discussion, under the alignment effect hypothesis, family shareholders might strengthen the governance mechanism so as to limit earnings management practices. In contrast, the entrenchment hypothesis suggests that family shareholders might weaken the governance system in the firms in order to commit earnings management practices without being exposed by other shareholders. Therefore, it is an empirical question whether or not family shareholders moderate the effectiveness of their firms' governance. Hence, in recent years, there has been an increasing interest in examining the effectiveness of governance mechanism in constraining earnings management practices in family-controlled firms (Prencipe & Bar-Yosef, 2011; Jaggi et al., 2009; Setia-Atmaja et al., 2011; Stockmans et al., 2013; Wan Mohammad & Wasiuzzaman, 2019). These studies provide evidence that supports both the alignment and entrenchment hypotheses. For example, Prencipe and Bar-Yosef (2011) examine the role of the board independence and CEO duality in reducing earnings management practices on a sample of Italian family-controlled firms. First, the study found that independent directors and CEO duality are effective in constraining earnings management practices for the full sample of family- and non-family-controlled firms. However, in family-controlled firms, the presence of independent directors on the board significantly increased the practices of earnings management. This result indicated that the governance mechanism becomes ineffective in family-controlled firms. Likewise, Jaggi et al. (2009) examined whether the effectiveness of the independent directors in constraining earnings management practices is reduced in family-controlled firms. Based on a sample of listed firms in Hong Kong, the results show that a higher proportion of independent directors on corporate boards is associated with a lower level of earnings management practices. However, the effectiveness of the independent directors in constraining earnings management practices declined when family controlled the firms via both ownership concentration and the presence of family members on the board. Other studies by Jaggi and Leung (2007) find that the effectiveness of the audit committee is significantly reduced when family members dominate the corporate board. Similar findings are documented by Wan Mohammad and Wasiuzzaman (2019). They found that audit committee independence is not effective in mitigating earnings management practices in the

firm that has high family ownership. The study utilised a sample of non-financial firms listed on Bursa Malaysia between the years 2004 and 2009.

Unlike the above studies, several studies (Setia-Atmaja et al., 2011; Stockmans et al., 2013) have documented the effectiveness of the corporate governance mechanism in reducing earnings management practices in family-controlled firms, as suggested by the alignment hypothesis. For instance, Setia-Atmaja et al. (2011) evaluated the effect of board independence in constraining earnings management practices in family-controlled firms listed on the Australian Securities Exchange (ASX). The findings indicated that the proportion of independent directors significantly reduced the practices of two types of earnings management in family firms; namely, current and long discretionary accrual. Also, they found that the presence of an independent chairman is effective in family firms only when there are effective independent directors who support him on the board. Hence, the study concluded that board independence is effective in mitigating type II agency problem and the entrenchment effect, which is a common problem in family-controlled firms. In line with these findings, Stockmans et al. (2013) found that the proportion of independent directors and CEO duality is effective in limiting the practices of earnings management in Belgian family firms that face type II agency problem due to a conflict of interest between controlling family shareholders and minority shareholders. However, the study did not find these board characteristics effective in limiting the earnings management practices in private family firms which did not suffer from an agency problem.

The studies reviewed above provide contradictory evidence regarding the effectiveness of the governance characteristics on reducing earnings management practices in family-controlled firms. Three factors might explain these conflicting results. First, the differences in the institutional context of the countries of these studies might determine whether family shareholders act under the entrenchment or alignment effect. For example, Fan and Wong (2002) argue that in developing countries, earnings management is expected to be greater, since these countries have low protection for minority shareholders and less transparent financial reporting. These circumstances might induce controlling shareholders in the firm to engage in earnings management practices without fear of being legally liable (Bao & Lewellyn, 2017; Ali et al., 2007; Chi et al., 2015).Sine, the availability of minority shareholder protection measures such as disclosure requirements or fines for misconduct might protect minority shareholders and reduce controlling shareholders' incentive to become involved in earnings management practices (Bao & Lewellyn, 2017). Unlike developing countries, developed countries have strong shareholders' protection rights,

effective law enforcement and high levels of transparency, which in turn might strengthen the governance mechanism and reduce the incentive of managers and controlling shareholders to manipulate earnings (García-Meca & Sánchez-Ballesta, 2009). In this regard, Leuz et al. (2003) empirically documented that earnings management is higher in countries that have low shareholders' protection, weak law enforcement and a less developed stock market.

Second, the degree of effectiveness of the governance system in family firms might affect the ability of family shareholders and managers to engage in earnings management practices. In line with this argument, a number of studies (Krishnan & Peytcheva, 2019; Chen et al., 2020) argue that a weak governance system might facilitate manipulation activities by the family owner. For example, Chi et al. (2015) found that the presence of an effective board of directors in family firms significantly reduced their engagement in earnings management practices. Likewise, Chen et al. (2020) found that when internal control of the family firms is weak, family owners take advantage of the weakness of the internal control system to conduct accounting manipulation (entrenchment effect). However, when the firm adopts public internal control disclosure with the aim of increasing the effectiveness of the internal control system, the study found that family firms in the year of adoption of internal control disclosure recorded lower misstatement cases than non-family firms (alignment effect). Chen et al. (2020) interpret this finding by stating that when family firms disclose their internal control practices, they come under scrutiny from shareholders, in addition to the fact that the disclosure requirements strengthen the internal control system. These factors together mitigate the entrenchment effect of the family firm. The family owner will become less entrenched because the public disclosure of the internal control practices will enable shareholders to identify the family firm that has an ineffective internal control system (Chen et al., 2020). This might lead to a decrease in the stock price of companies with such ineffective internal control systems. Since family firms have substantial ownership in their firm, they will bear the cost of the low share price.

Third, family shareholders might act under both the entrenchment and alignment effects, based on the level of their ownership in the firms. For example, Wang (2006) documented that the relationship between earnings quality and family ownership shows an inverted U-shape in which, when family ownership reached the level of 67.44%, family firms reported lower earnings management practices than non-family firms. However, when the family ownership reached beyond 67.44%, family firms engaged more in earnings management practices than non-family firms. Wang (2006) concluded that when the family members own

a highly significant number of shares of the firm, they tend to behave according to the entrenchment hypothesis. However, low family ownership level makes the family owners act under the alignment hypothesis.

Although there has been an increasing interest in examining the effectiveness of governance mechanism in constringing earnings management practices in family-controlled firms, studies that focus on this issue have examined the effectiveness of corporate governance in family firms by using only the individual corporate governance characteristics such as board independence and audit independence to proxy for the overall governance system. For example, Prencipe and Bar-Yosef (2011) examined the role of board independence and CEO duality in reducing earnings management practices on a sample of Italian family-controlled firms. Jaggi and Leung (2007) investigated the effectiveness of the audit committee in reducing earnings management practices in firms dominated by family shareholders. To the researcher's knowledge, no single study exists which examine the effectiveness of corporate governance in the family firm by constructing a comprehensive governance index. This is important because the use of individual corporate governance characteristics to proxy for overall governance systems in the firms was subject to considerable criticism in the literature. For example, F. Bekiris and Doukakis (2011) state that single corporate governance measures cannot capture the multidimensional aspects of a corporate governance system. In the same vein, Brown et al. (2011) state that measuring only a single component of corporate governance characteristics (e.g., board independence) cannot reflect on its own the overall quality of corporate governance systems in the companies. In line with this argument, Jiang et al. (2008) criticise previous studies that use individual corporate governance measures in examining the effect of corporate governance on earnings management practices, such as the size of the board, auditor type and the composition of the audit committee. Jiang et al. (2008) in this regard argue that these single corporate governance measures represent a narrow scope of the whole corporate governance system in the companies, which has many dimensions. On the other hand, several studies (e.g., Ntim et al.,2015 ; Agrawal and Knoeber 1996)observed that corporate governance factors tend to depend on or complement each other in order to be effective. Thus, examining them individually might not provide reliable results(Agrawal & Knoeber ,1996) .Thus, in response to these methodological criticisms, several studies (Jiang et al., 2008; F. Bekiris & Doukakis, 2011; Brown et al., 2011; Pergola and Joseph, 2011) suggest constructing a comprehensive corporate governance index to proxy for the governance mechanism of the companies. In this regard, Pergola and Joseph (2011) state that using a corporate governance index that incorporates the assessment of various corporate governance mechanisms might offer

reliable criteria for ranking the companies based on the strengths of their corporate governance systems. Hence, the current study will contribute to the existing literature by studying the influence of family ownership on the association between corporate governance mechanism (measured by the comprehensive index) and earnings management practices in Saudi listed firms. The findings of this study will be expected to be more convincing since the corporate governance index will better capture the quality of the governance mechanism in the firms. In addition, the conclusion of the current study regarding the effectiveness of corporate governance will not be limited to certain components of corporate governance such as audit committee characteristics or board composition (Bekiris & Doukakis, 2011).

2.3 Summary of the literature review chapter

This chapter reviewed the theoretical and empirical literature on the relationship between corporate governance mechanisms and earnings management practices. This chapter was divided into two sections. The first section discussed the underlying theories, which are the signalling theory, stewardship theory and agency theory, that explain the impact of corporate governance on earnings management practices. The second section reviewed the literature on the associations between corporate governance mechanisms and earnings management practices.

In the first section, after reviewing the underlying theories that explain the impact of corporate governance on earnings management, the researcher chooses to adopt agency theory as a theoretical foundation of this study. This is because agency theory aligns with the orientation of SCGC regarding the assumptions of managerial behaviours and the functions of governance mechanisms in the firms. Furthermore, agency theory provides interpretations of the managers' motivations to manipulate the reported earnings and explains the need for corporate governance mechanisms in the firms. In this study, corporate governance mechanisms are supposed to perform the monitoring function in the firms; thus, they are examined as a tool to alleviate the agency conflict that results in earnings management practices.

In the second section, the review of prior studies that examine the association between corporate governance and earnings management practices identified gaps that the current research could help to close as follows:

First, the review of the studies examining the nexus between corporate governance and earnings management practices shows that most studies focus on exploring the effect of individual corporate governance characteristics on earnings management practices. However, limited studies examine the association between corporate governance mechanisms and earnings management practices by using the corporate governance index as a proxy for the corporate governance system in the companies. Thus, this study fills this gap by examining the influence of corporate governance on earnings management by using both the individual corporate governance characteristics and the composite governance index since combining both approaches are expected to capture more precisely the role of corporate governance in earnings management practices in Saudi firms.

Second: reviewing the literature that relates to the association between individual corporate governance variables and earnings management practices identifies several limitations that can be addressed by the current studies study as follows:

(i) Majority of prior studies do not consider the quality of the directors' independence when they examine the effectiveness of board /audit committee independence in reducing earnings management practices. Thus, this study addresses this limitation by developing a strict board independence measure used to evaluate the strict independence of each declared independent director on the board of directors /audit committee by using 11 formal independence criteria extracted from the 2017 SCGC.

(ii) Most studies examining the effect of board size, board meetings, audit meetings, multiple directorships, government shareholders, institutional shareholders, family shareholders, and blockholders shareholders on earnings management practices were conducted in developed countries. Also, the review shows that existing studies have failed to establish conclusive results regarding the association between these individual corporate governance mechanisms and earnings management practices in developed or developing countries. Thus, the current study contributes to the governance literature by examining the effect of the aforementioned individual governance variables on earnings management practices in the Saudi context. Therefore, the results of the current study are expected to enhance the current understanding regarding the effectiveness of the governance mechanisms in developing countries like Saudi Arabia, which has institutional environments remarkably different from developed countries.

Third, reviewing the studies in this chapter shows that prior studies that examine the effectiveness of corporate governance on reducing earnings management practices in family firms have used only the individual corporate governance characteristics, such as board independence and audit independence, as a proxy for the overall governance system. According to the researcher's knowledge, no single study examines the effectiveness of corporate governance in reducing earnings management practices in family firms by constructing a comprehensive governance index. Hence, this study fills this gap by examining the influence of family ownership on the association between corporate governance mechanisms (measured by using a comprehensive governance index) and earnings management practices in Saudi-listed firms.

CHAPTER THREE

HYPOTHESES DEVELOPMENT

3 Introduction

This research aims to examine the effect of corporate governance mechanisms on earnings management practices in Saudi listed firms. To achieve this aim , 13 hypotheses are developed in this study and the theoretical and empirical links that show the connection between corporate governance mechanisms and earnings management practices are discussed. The relationship between corporate governance and earnings management practices is examined using both the compliance-index model and the equilibrium-variable model. The compliance-index model investigates the relationship between a composite Saudi corporate governance index and earnings management practices. The equilibrium-variable model examines the association between individual corporate governance variables and earnings management practices. This chapter is organised as follows: the hypothesis related to the effect of the Corporate Governance Index and earnings management practices will be discussed in section (compliance-index model). The hypotheses related to the equilibrium-variable model will be discussed in sections 3.2 to 3.12. Finally, section 3.13 will discuss the hypothesis related to the role of family ownership on the relationship between corporate governance and earnings management practices.

Table 3.1: All hypotheses for the compliance-index model and equilibrium-variable model

Dependent Variable	**Earnings management estimated by Modified Jones Model (1995)**	
Explanatory Variable	**No. Hypothesis**	**Expected sign**
Saudi Corporate Governance Index	1	_
Board of Directors' Characteristics		

Strict Independent Directors	2	_
Audit Independent Index	3	_
Board Size	4	_
Board Meeting	5	_
Audit Meeting	6	_
Directorships of the Board members	7	_
Family Members on the Board	8	+
Ownership structure		
Government Ownership	9	_
Institutional Ownership	10	_
Family Ownership	11	_
Blockholder Ownership	12	_
The role of family ownership on the relationship between SCGI and EM	13a/b	-/+

3.1 Saudi Corporate Governance Index and earnings management

Theoretically, agency theory suggests that the divergence of interests between managers and shareholders of the company causes agency problem (Jensen and Meckling, 1976). This problem stems from several factors inherent in the modern corporation, such as separation between the management and ownership functions, expensive enforceable contracts, and the information asymmetry between insiders of the firms and shareholders (Hoque, 2006; Jensen and Meckling,1976).These shortcomings in the agency relationship induce managers to engage in earnings management practices (Davidson et al., 2005). Managers might utilise the information asymmetry between insider and outside investors to hide the actual financial information about the firms (Healy and Wahlen, 1999), or they might exercise their discretion in reporting earnings in order to promote their self-interests (Healy, 1985). For example, managers of a firm that adopts a compensation plan based on reported earnings might have an incentive to increase the firm's reported earnings to obtain higher compensation value (Healy, 1985). In order to mitigate the agency problem in modern firms and prevent opportunistic managerial behaviours, firms should employ an effective monitoring system such as corporate governance (Hoque, 2006; Fama and Jensen, 1983; Haniffa and Hudaib, 2006; Bonazzi and Islam, 2007;.Peasnell et al., 2005; Abdul Rahman and Haneem Mohamed Ali, 2006). The corporate governance mechanisms will exercise a monitoring role over management activities. This, in turn, will help in mitigating managerial

opportunistic behaviours. According to Lehmann (2016), a good governance system in the firm will help implement well-established control and incentive mechanisms so as to constrain opportunistic behaviour in the company and increase the integrity and reliability of the financial reporting. Based on this view, a large number of studies have investigated the relationship between a number of individual corporate governance mechanisms and earnings management practises (e.g., Sáenz González & García-Meca, 2014; Rahman & Ali, 2006; Jamaludin et al., 2015; Peasnell et al., 2005; Saona et al., 2020) whereas a small number of studies have investigated the relationship between a broad composite governance index and earnings management practices (Larcker et al., 2007; Bowen et al., 2008; Lehmann, 2016 ; Jiang et al., 2008).However, the limited studies that examine the association between corporate governance index and earnings management practices generally report that better-governed firms tend to engage less in earnings management practices (e.g., Jiang et al., 2008; Bekiris & Doukakis, 2011 ;Shen & Chih, 2007)

Within the Saudi firms' context, CMA reformed the corporate governance in Saudi firms by introducing a new Saudi corporate governance code in 2017. This code is expected to increase the effectiveness of corporate governance mechanisms in Saudi firms and improve the firms' performance and practices, including financial reporting quality and earnings management. Given this, this study argues that high levels of compliance with SCGC provisions indicate the effectiveness of the corporate governance practices of the firms, which in turn will help reduce earnings management practices. In addition, based on the empirical and theoretical perspective that suggests that well-governed firms are expected to have low earnings management practices, this study hypothesises that a higher level of corporate governance score as measured by the Saudi Corporate Governance Index (SCGI) is associated with lower earnings management practices. The following hypothesis is therefore formulated:

H_1: There is a significant and negative relationship between firm-level corporate governance measured by the Saudi Corporate Governance Index (SCGI) and earnings management practices.

3.2 Hypothesis development: Strict Board Independent and earnings management

From an agency theory perspective, independent directors in the board constitute an effective governance system that can mitigate agency problem and agency cost resulting from the separation of ownership and control in public firms (Jensen and Meckling, 1976; Fama and Jensen, 1983). Prior studies provide explanations of why outside directors may be effective actors in boards of directors. First, independent directors do not have personal interests in the firms. Thus, they are more willing to act in favour of shareholders' interests (Agrawal and Chadra, 2005; Razali and Arshad, 2014; Shan et al., 2013). Second, it is not in the interests of independent directors to hide accounting problems or fraudulent activities which may be committed by management, since independent directors may face serious damage to their reputation if such practices are uncovered in their companies (Abdullah et al., 2010). Such a development might also diminish their chances of serving on other companies' boards of directors (Fich and Shivdasani, 2007). In the same vein, Fama and Jensen (1983) indicate that outside directors are motivated to provide effective monitoring to signal their good reputation to the external labour market. Similarly Ntim et al. (2013) states that independent directors provide the necessary checks and balances to increase a board's efficacy in advising, monitoring and penalising senior management in the firms. Thus, due to the benefits of independent directors on the board, those directors are expected to act as a strong corporate governance mechanism for monitoring and restricting opportunistic managerial practices in the firms. Based on this view, several studies examine the association between the presence of independent directors on the board and earnings management practices. Although several studies in the literature (e.g., Saona et al., 2020 ; Peasnell et al., 2005; Abdou et al., 2020 ; Feng & Huang, 2020) found that independent directors are effective in constraining earnings management practices, these studies could be criticised for not considering the quality of the directors' independence when computing the ratio of independent directors (Crespí-Cladera & Pascual-Fuster, 2014; García-Meca & Sánchez-Ballesta, 2009). Hence, to address this criticism, the current study develops a measure to capture the quality of board independence in Saudi firms. This measure evaluates the strict independence of each declared independent director on the board of directors using 11 formal independence criteria extracted from the 2017 Saudi Corporate Governance Code. Next, the study uses this measure to examine the impact of strict board independence on constraining earnings management practices in Saudi-listed firms. By using the strict independence measure, the current study is expected to provide accurate results regarding the effectiveness of board independence in constraining earnings management practices in

the Saudi context. As mentioned above, the measure of board independence in this study is extracted from governance provisions of the Saudi code. The Saudi code strongly emphasises on the independence of the independent directors on the board of Saudi firms, which introduces 11 formal independence criteria that the independent directors in Saudi firms should meet. Accordingly, independent directors who violate at least one of the 11 independence criteria will not be classified as independent directors and should be excluded from the board of directors. In addition, the Saudi code requires the corporate boards to consist of a majority of non-executives, suggesting that such practices will enhance board independence and improve the effective monitoring of managers. Given the above theoretical and empirical literature, this study hypothesises that boards with a greater proportion of strict independent directors are expected to effectively monitor the financial information process and constrain any attempts by managers to manipulate accounting information. Hence, following the foregone discussion, the following hypothesis can be formulated:

H_2: There is a negative and significant relationship between the proportion of strict independent board members and earnings management practices.

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3.3 Hypothesis development: Audit Committee Independent and earnings management

The audit committee is an essential component of the governance system in terms of constraining earnings management practices. This is because the role of the audit committee is to supervise the process of financial reporting, evaluate the firm's internal control systems, and ensure that the external auditor is capable of detecting any manipulation in financial reporting (Felo et al., 2005; Klein, 2002). Furthermore, among the responsibilities of the audit committee is to provide the board of directors with detailed information in order to help them understand the firm's financial statements. This practice in turn will enhance the capacity of the board of directors to monitor the management (Pincus et al., 1989).

The independence of the audit committee is an important determine of its effectiveness. According to Klein (2002) the effectiveness of the audit committee in monitoring the process of financial reporting depends on the independence of the audit committee members. Based on this view, several studies in the literature examine the effect of independent directors on the audit committee in constraining earnings management practices (Katmon & Farooque, 2017; Saona et al., 2020; Baxter & Cotter, 2009). For instance, Saona et al. (2020) finds that independent directors on the audit committee are capable of reducing short-term earnings management practices. Likewise Feng and Huang (2020) found that the independence of the audit committee was effective in constraining earnings manipulations in firms that had high quantile levels of earnings management practices. Unlike these results Katmon and Farooque (2017) found no significant effect of the audit committee that was entirely comprised of independent directors in reducing earnings management practices on a sample of UK listed firms.

Despite the conflicting evidence regarding the effectiveness of the independent of audit committee, this study hypothesises that an independent audit committee is effective in mitigating earnings management practices in Saudi firms. This hypothesis stems from agency theory view which suggests that the presence of independent directors will strengthen the governance structure of the firms thereby enhance the functions of the audit committee (Fama and Jensen, 1983). Since the Independent directors on the audit committee can objectively evaluate the firms' managerial behaviours, the financial reporting process and the internal control system. Also, they can act independently in performing their monitoring responsibilities (Gebrayel et al., 2018). In the same vein, several researchers support the argument that the audit committee's effectiveness depends on its members' independence. For instance, Klein (2002) states that the audit committee's effectiveness in

monitoring the process of financial reporting depends on the independence of the audit committee members. A similar view is suggested by Wan Mohammad and Wasiuzzaman (2019), who state that the audit committee's independence improves the firm's corporate governance and makes the audit committee effective as a monitoring device. In line with this argument, Vicknair et al. (1993) state that the audit committee should be independent of the management. This is to keep the internal and external auditors free from intervention by the firms' managers. In addition, prior studies (Bédard et al., 2004; Saona et al., 2020; Sharma and Kuang, 2014) documented the effectiveness of independent directors on audit committees as they found that audit committee independence is effective in reducing earnings management practices.

Due to the importance of independent directors on the audit committee, the Saudi corporate governance code requires the chairman of the audit committee to be an independent director. Also, the code recommended the audit committee include at least one independent director among its members. Also, the Saudi code prohibits executive members from joining audit committees. It is worth mentioning that the Saudi code sets specific independent standers that an independent audit committee member must meet. Therefore, the current study constructs an audit committee independence compliance index comprising the 11 independence criteria recommended by the 2017 Saudi Corporate Governance Code to examine the effect of audit committee independence on earnings management practices. Hence, based on the above discussion, the following hypothesis is formulated:

H_3: There is a negative and significant relationship between the level of audit committee independence index and earnings management practices.

3.4 Hypothesis development: Board Size and earnings management

Agency theory suggests that a large board size increases the effectiveness of its monitoring activities (Haniffa & Hudaib, 2006; Kiel & Nicholson, 2003). According to agency theory, a larger board will be more vigilant in capturing any agency problems that may arise because of the large number of members observing managers' activities (Kiel & Nicholson, 2003). In this same vein, Beasley & Salterio (2001) argue that larger boards provide more effective monitoring functions because larger boards increase the possibility of the company having more members with varied experience in financial reporting issues. This, in turn, might help monitor earnings management practices conducted by the managers. A contrary theoretical proposition from agency theory suggests that larger boards are not effective, while smaller boards are good and effective at improving the monitoring of management practices. Specifically, Jensen (1993), Lipton and Lorsch (1992) and Sáenz González and García-Meca (2014)Jensen (1993), Lipton and Lorsch (1992) argue that a large board may suffer from problems of poor communication and coordination between its members, resulting in less coherence and less effective discussion in the boardroom. In addition, a large board is associated with the free-riding problem. This is because the cost of not performing effective monitoring will be distributed among a large number of directors (Cheng et al., 2008). These factors together might negatively impact on monitoring of earnings management practices by the board of directors. In contrast to the shortcomings of the large board size, Lipton and Lorsch (1992) state that a small board might not be subject to the free-rider issue due to the small number of directors involved in the board. This is because each member's performance on the board can be easily monitored (Haniffa & Hudaib, 2006). Also, smaller boards are often associated with practical discussions because directors in a small board might have the opportunity to know each other and participate in an effective debate with all directors, allowing them to reach a common consensus from their discussion (Lipton & Lorsch, 1992).

The conflicting theoretical views related to the effectiveness of board size in reducing earnings management practices are also reported in governance literature, in which several studies report mixed results regarding the impact of board size on earnings management practices. For instance, Saona et al. (2020) and Habbash (2012) observed that larger board size is negatively associated with earnings management practices. Whilst, Zalata & Roberts (2016) and Rahman and Ali (2006) documented that a large board is positively associated with earnings management practices.

Despite the conflicting views and evidence related to board size's effectiveness, this study will argue that large board size reduces earnings management practices in Saudi listed firms. This is because large board size might increase the board's capacity to monitor managerial practices effectively. For instance, large board size is more likely to include directors with varied financial reporting and firms sector experience (Beasley and Salterio, 2001; Saona et al., 2020). Also, a large board will be more likely to include more independent directors who are expected to perform an effective role in monitoring, advancing and disciplining management (Jensen, 1993). Also, a greater number of directors will help the board delegate more responsibilities to board subcommittees such as audit committee than a smaller board would (Linck et al., 2008). In this regard, Klein (2002) argues that the effectiveness of board monitoring increases as boards get bigger, due to the ability of the large board to spread the workload over large numbers of directors. Hence, the these above-mentioned advantages of the large board might increase the board's monitoring capacity to limit earnings management practices in the Saudi firms (Biao Xie et al., 2003; Klein, 2002; Dalton et al., 1999).

With specific reference to the Saudi setting, the Saudi corporate governance code suggests that the number of board members should be between three and, at most, eleven directors. Although this rule gives Saudi firms some flexibility in determining the size of their board, the Saudi code suggests that Saudi firms should consider the suitability of the board size to firms' size and the nature of the firms' activities when composing the board of directors. Since all Saudi firms in this study's sample are listed firms on the Saudi stock exchange, these firms are large. Thus, Saudi firms are expected to form a large board that suits the size of their firms and the complexity of their operations. According to Coles et al. (2008) large firms usually suffer from complexity in their activities, leading them to form a large board with many directors to enhance the firm monitoring activities. Hence, based on the above discussion and given the findings of previous studies (B. Xie et al., 2003; Abed et al., 2012 ; Sáenz González and García-Meca, 2014) that show that larger boards are effective in reducing earnings management practices, the following hypothesis can be formulated:

H_4: There is a negative and significant relationship between board size and earnings management practices

3.5 Board Meetings and earnings management

Prior studies (Vafeas, 1999; Adams & Ferreira, 2009; Katmon & Farooque, 2017) consider the frequency of board meetings to be an indicator of intensity of the board activities and the effectiveness of its monitoring practices). One theoretical proposition suggests that a higher frequency of board meetings can result in a higher quality of managerial monitoring. (Vafeas, 1999).This is because attending the board meeting is critical for the directors, as it might be considered the main resource through which they can acquire the essential information about the firm that they need to fulfil their responsibilities (Adams & Ferreira, 2009). Thus, directors who do not attend the board meeting might not obtain information on the firm (Adams & Ferreira, 2009). According to Minichilli et al. (2009), board members are expected to be active during the meeting. The board member should prepare him/herself before the meeting by examining the information and collecting further information if needed. This will allow the member to acquire deep knowledge about the topics discussed in the meetings and participate effectively in the decision-making process. Also, directors should be critical and willing to ask the management perceptive questions during the board meeting, which will contribute to the effectiveness of their monitoring activities (Minichilli et al., 2009). Against this view, other researchers such as Lipton and Lorsch (1992) argue that the board of directors might not benefit from the board meetings in practice. Lipton and Lorsch (1992) indicate that board members usually have limited time in the meeting, which hinders their ability to use this time to effectively exchange ideas and opinions between the directors and the managers. Lipton and Lorsch (1992) and Vafeas (1999) state that routine activities and formalities during the board meeting consume much time, which may restrict the independent directors' opportunities to exercise their monitoring role. In this case, frequent board meetings will not be effective in monitoring the opportunistic managerial practices

Despite the conflicting views related to the effectiveness of board meeting this study will argue that the more often the board meets, the lower will be the level of earnings management practices. This is because board meetings are an essential resource through which directors can acquire essential information about the firms in order to fulfil their responsibilities (Adams and Ferreira, 2009). Also, a large number of board meetings might allow the directors to allocate more time to carrying out their roles in and obligations to the firms they serve (Vafeas, 1999). In line with this argument, Chen et al. (2006) documented that firms with a high number of board meetings are less likely to engage in financial fraud.

This is because those firms allocate more time to dealing with their financial problems. Similarly Sáenz González and García-Meca (2014) observed that the more the board meets, the more effective it becomes in monitoring managerial practices, resulting in a lower level of earnings management practices.

With respect to Saudi Arabia, the Saudi corporate governance code (2017) recommends that all corporate boards should meet regularly; specifically, it requires the board to meet at least four times during the year and disclose the number of board meetings in the firms' annual reports. This implies that the Saudi corporate governance code expects a higher frequency of board meetings to enhance the quality of board monitoring, which results in reducing earnings management practices. Given the theoretical view and the empirical evidence that supports the effectiveness of the frequency of board meetings in reducing earnings management discussed above, the following hypothesis can be formulated:

H_5: There is a negative and significant relationship between board meetings and earnings management practices.

3.6 Audit Meetings and earnings management

The audit committee is an essential component of the governance system in terms of constraining earnings management practices. The audit committee's role is to supervise the process of financial reporting, evaluate the firm's internal control systems, and ensure that the external auditor is capable of detecting any manipulation in financial reporting (Felo et al., 2005; Klein, 2002). Moreover, the audit committee is responsible for alleviating the agency problem between the firm and its outside shareholders by overseeing the financial reporting's integrity (Klein, 2002). According to Klein (2002), the audit committee fulfils its role by conducting frequent meetings with the internal financial managers and external auditors to review the firm's external audit procedures, financial statements, and internal control statutes. Therefore, prior studies (Katmon & Farooque, 2017; Klein, 2002; Alhossini et al., 2021) consider the audit committee meeting as a proxy for its level of activity. Alhossini et al. (2021), in this regard, state that researchers suppose that the more the audit committee meets, the more it becomes effective in monitoring the management practices. Hence, frequent audit meetings might contribute positively to improving the credibility of financial reporting (Alhossini et al., 2021). Therefore, several studies examine the effect of audit committee meetings on earnings management practices by using the total number of audit committee meetings in the year to proxy for the audit committee's diligence, However, results were not conclusive; for example, Biao Xie et al. (2003) reported that audit committee meeting frequency is associated negatively with current discretionary accrual (a proxy of short-term earnings management). In contrast, several studies (Sharma & Kuang, 2014; Yang & Krishnan, 2005) did not find any association between the number of audit committee meetings and earnings management practices.

Despite the above conflicting evidence regarding the effectiveness of audit meetings discussed in reducing earnings management practices, this study will argue that the more the audit committee meets, the more it becomes effective in constraining earnings management practices. This is because the main role of the audit committee is to monitor the financial reporting process and monitor the management who is responsible for preparing the financial reports (Felo et al., 2005; Klein, 2002). Also, high numbers of meetings mean that the audit committee members are allocated more time and effort to discharge their duties (Qamhan et al., 2018). In this regard, Biao Xie et al. (2003) ,Gebrayel et al. (2018) and Inaam & Khamoussi (2016) indicate that directors who dedicate more time to audit meetings are more likely to provide effective monitoring practices, which help to reduce earnings management practices. Prior studies found that the frequency of audit meetings can measure the degree

of directors' commitments to monitor opportunistic managerial practices and, thus, such features can enhance the quality of firms' financial reporting (Biao Xie et al. ,2003 ;Gebrayel et al., 2018 ;Inaam & Khamoussi, 2016)

In the Saudi context, the Saudi corporate governance code (2017) recommends that the audit committee to meet regularly; specifically, it requires the audit committee to meet at least four times during the year and disclose the number of meetings in the firms' annual reports. Also, the Saudi code recommended the audit committee to hold regular meetings with the firm's external and internal auditors. These regulations indicate that the Saudi corporate governance code expects a higher frequency of audit committee meetings to enhance the quality of monitoring in the firms, which results in reducing the earnings management practices in Saudi firms. Hence, following the foregone discussion, the following hypothesis can be formulated:.

H_6: There is a negative and significant relationship between audit meeting and earnings management practices.

3.7 Multiple directorships and earnings management

Prior studies have debated whether or not the presence of members with multiple directorships increases the effectiveness of the board of directors. However, there are two theoretical hypotheses have been developed in the literature to explain the relationship between multiple directorship and earnings management practices; these are the reputation hypothesis and the "busyness" hypothesis Alshetwi (2016).The reputation hypothesis implies that obtaining additional directorship positions depends on the performance and reputation of the directors (Fama & Jensen, 1983). Thus, directors in this case will be very sensitive about their reputation and will avoid anything that might damage it. In addition, directors will work hard to present themselves as good monitors, in order to obtain additional directorship positions (Fama & Jensen, 1983). Alshetwi (2016) suggests that this situation will lead to an increase in the effectiveness of monitoring by the directors and decrease the level of earnings management. In contrast,, the busyness hypothesis indicates that obtaining several directorships will decrease the effectiveness of the directors in monitoring the companies, since they will be too busy to serve each firm effectively. This situation may lead to a decrease in the ability of the directors to detect earnings management practices (Alshetwi, 2016).

Despite the existing of conflicting theoretical views related to the effectiveness of directors with multiple directorship positions , this study will argue that the presence of directors with multiple directorship on the board will contribute positively in improving its performance and consequently reducing earnings management practices. This argument is supported by several factors. First, the market for outside directorships gives directors an incentive to develop their performance in their own firms. This is because the probability of obtaining directorship positions in the market is determined by the directors' previous performance. Also, rational directors recognise that obtaining a directorship position will signal to the market their competency for outside directorships, which may facilitate obtaining additional directorship positions in the future (Fama and Jensen, 1983). For this reason, directors are expected to be motivated to improve the performance of the firms they serve, and to constrain earnings management practices. In addition, it is expected that earnings management practices will receive great attention from directors because such practices have a negative impact on their reputation as expert directors, which may put their directorship at risk (Masulis and Mobbs, 2011; Srinivasan, 2005).

Second, apart from the reputation gained by directors who hold outside directorships, this position carries a number of pecuniary benefits such as bonuses and compensation, as well as non-pecuniary benefits such as the respect of society and an increase in self-satisfaction. In this regard, Lorsch and MacIver (1989) conducted a survey to explore the most important reasons that drive directors to accept outside directorship offers. Based on directors' responses, the results showed that financial benefits were the least important reason. However, the opportunity to learn from expert management, to contribute to society through improving the company's performance, and to meet self-satisfaction needs while gaining personal prestige, were the most important factors that motivated directors to accept outside directorship positions. For these reasons, it is expected that directors will play an important role in improving the board's performance and consequently in mitigating disreputable practices such as earnings management.

Despite the effectiveness of directors with multiple directorships in providing efficient monitoring in the firms, The Saudi Corporate Governance Code does not allow the directors to occupy more than five directorships on the boards of other listed Saudi firms. This requirement indicates that holding so many directorships positions might decrease the effectiveness of the directors in monitoring the companies, since they will be too busy to serve each firm effectively.

In line with the argument supporting the effectiveness of directors with multiple directorships, several studies (Chtourou et al., 2001; Saleh et al., 2005; Masulis and Mobbs, 2011; Jian Zhou, 2004; Bédard et al., 2004) provided evidence showing that directors with multiple directorship positions are effective in constraining earnings management practices. Therefore, following the foregone discussion, the following hypothesis can be formulated:

H_7: There is a negative and significant relationship between multiple directorships and earnings management practices.

3.8 Family members on the board and earnings management

The impact of a family member on the board on earnings management practices can be explained by the context of alignment and entrenchment effects. The alignment effect hypothesis suggests that the interest of controlling family members is aligned with minority shareholders in the firm. Thus, they are less likely to expropriate the interests of minority shareholders through earnings management practices (Wang, 2006). According to the alignment effect hypothesis, the family member is less likely to be involved in earnings management practices because these practices might destroy the reputation of the family firm, their wealth and long term performance (Wang, 2006). Since family members sit on the boards of their firms (Ali et al., 2007), this, in turn, allows them to carry out superior direct monitoring of their managers' behaviour and spot any earnings management practices that the managers conduct (Prencipe & Bar-Yosef, 2011). These circumstances together will reduce in family firms the type I agency problem which arises from separation of ownership and management in firms (Ali et al., 2007). In contrast, the entrenchment hypothesis suggests that controlling family members are motivated to engage in opportunistic behaviour at the cost of minority shareholders; that is, to obtain private benefits that are not distributed to other minority shareholders (Wang, 2006; Shleifer & Vishny, 1997). The entrenchment hypothesis is in line with the agency problem type II which occurs due to the conflict of interests between controlling shareholders and minority shareholders in the firms, rather than between managers and owners (Setia-Atmaja et al., 2011; Jaggi et al., 2009). Since controlling family shareholders might control the board and the management of their firms, they might make decisions at the expense of less powerful shareholders by using their positions and privileged access to superior information (Ali et al., 2007; Al-Okaily et al., 2020). Hence, entrenched family owners might have the incentive to use earnings management practices to hide their acts of manipulation and prevent outside shareholders from uncovering the opportunistic practices (Chen et al., 2020).

However, despite the existence of a competing theoretical framework relating to the effect of family members on the board on reducing earnings management practices This study will argue that the presence of family members on the board of Saudi firms will cause an increase in the practices of earnings management. Theoretically, entrenchment hypothesis suggests that when family members sit on the firm's board, they may control the board, enabling

them to be involved in earnings management practices and obtain private benefit at a cost to minority shareholders (Eng et al., 2019). Also, they might make decisions at the expense of less powerful shareholders by using their positions and privileged access to better information (Ali et al., 2007; Al-Okaily et al., 2020). This view is supported by Chen et al. (2020), who argue that when family members sit on the board or serve in the management team, this position enables them to gain more power over the board. It can also facilitate their entrenchment process and make them less affected by any attempts by minority shareholders to alleviate their entrenchment practices. Chen et al. (2020) provide empirical evidence that supports this argument. They found that when family firms have high power in the board (measured by the number of family members sitting on the board or in the management team), they tend to engage more in misstatements and related party transactions compared to family firms that have low power in the board.

In addition, the presence of the family members on the board might weaken the monitoring effectiveness of the board of directors, since controlling families can interfere with the structure of the board of directors. For instance, they can influence the process of electing and nominating the independent directors on the board (Jaggi et al., 2009; Al-Okaily et al., 2020). Those independent directors will be less objective and independent because their appointment and reappointment on the board might depend on the discretion of controlling family members (Bao and Lewellyn, 2017). Also, the independent directors in family firms might have an implicit relationship with the controlling families' members (Prencipe and Bar-Yosef, 2011). Such a relationship might increase the risk of collusion between the independent directors and those family members on the board (Prencipe and Bar-Yosef, 2011). Thus, their independence is likely to be compromised. In line with this argument, Eng et al. (2019) argue that the independent directors in family firms are less likely to question and challenge the practices of the controlling family, particularly if the family members sit on the board as directors or executive members (Prencipe and Bar-Yosef, 2011). Hence, the weakness of the board of directors which is dominated by family members might facilitate the entrenchment of family members. This is because the board of directors, which is considered a governance tool, cannot discipline the controlling family members (Anderson and Reeb, 2003). In line with the argument suggesting the negative consequences of the presence of family directors on the board, the Saudi code adopts the same view, which appears clearly in its regulations that aim at restricting the presence of family members on the board. For example, the Saudi code does not allow the appointment of an independent director with a blood relationship with other directors on the board. Hence, based on the above theoretical discussion that suggests the inefficiency of family members on the board,

the current study argues that the presence of family members on the board will facilitate their engagement in earnings management practices. Hence, the following hypothesis can be formulated:

H_8: There is a positive and significant relationship between the proportion of family members on the board and earnings management practices.

3.9 Government ownership and earnings management

Previous studies have debated the question of whether or not the presence of government ownership is effective in constraining earnings management practices. One stream of studies argue that government shareholders might increase managers' incentives to manipulate reported earnings (Wang & Yung, 2011; Gaio & Pinto, 2018; Ben-Nasr et al., 2015). For example, Wang and Yung (2011) argue that government firms might engage more in earnings management practices than non-governmental counterparts. This is because government firms are characterised by weak governance systems and poor firm efficiency due to bureaucratic interference by the government and lack of competition in the market. Wang and Yung (2011) added that there is a lack of strong and effective monitoring for the managerial behaviour in government firms, since the monitoring tasks in these firms are usually performed by government officials who are, in fact, government agents. In the same vein, Ben-Nasr et al. (2015) argue that government firms usually have political objectives, which might motivate them to tunnel the resources of the firms into such objectives. Therefore, government owners might hide these expropriations by asking the managers to commit earnings management practices. Hence, these circumstances in government firms might induce managers to engage in resources misallocations and to exercise their discretion in reporting financial information (Gaio & Pinto, 2018; Wang & Yung, 2011).

Unlike the above view, other studies (Guo and Ma, 2015; Gaio and Pinto, 2018; Chen et al., 2011) argue that the presence of government shareholders in the firms might reduce the pressure on managers to manipulate reported earnings. This is because the government ownership might give the firms several advantages such as access to the capital market and the chance to obtain concessional financing, state-backed guarantees, and tax benefits (Cheng et al., 2015; Gaio and Pinto, 2018). In line with this argument, Cheng et al. (2015) examined whether access to bank loans mediates the association between state ownership and earnings management for IPO firms, since the state-owned firms have advantages in

gaining access to bank loans from state-owned banks. This easy access to debt means that the firm might depend less on equity for financing. As a result, state-owned firms are less likely to manage the earnings upwards in order to get high IPO prices. Since, earnings management might help the firm to secure more capital from the equity market. The results show that the accessibility of bank loans explains 26.5% of the negative correlations between state ownership and earnings management in the IPO year. These results confirm that access to bank loans reduces the incentive of state-owned firms to inflate reported earnings in order to obtain high IPO prices. Hence, providing support by the government to their firms might lead to reduce the incentive of managers to engage in earnings management in order to secure financial support.

In light of the above discussions, the study, in line with the argument, suggests that providing support by the government to firms leads to reducing managers' incentive to engage in earnings management. Hence, this study argues that government ownership in Saudi firms reduces earnings management practices. This is because the Saudi government provides financial support to their firms (AL-Dakhil, 2017). Thus, the managers of Saudi firms with government ownership will not be inclined to manipulate the reported earnings. The most recent example of Saudi government support is its announcement on April 2020 about a set of government packages to support the private sector and ease the negative impact of the COVID-19 pandemic on the Saudi economy (Saudi government measures, 2020). The government support package includes paying 60% of the salaries of Saudi employees in the private sector and injecting the banking sector with $13.3 billion to improve banking liquidity and help the banks provide credit facilities for the private sector. The government decided to offer private-sector exemptions and postponement of some government dues. In addition, the Saudi government provided grants to firms in the private sector and flexible deadlines for paying taxes (Saudi government measures, 2020). Hence, due to this government support, the study argues that a higher level of government ownership will be associated with lower earnings management practices in Saudi-listed firms. Hence, the following hypothesis can be formulated:

H_9: There is a negative and significant relationship between government ownership and earnings management practices.

3.10 Institutional ownership and earnings management

Prior studies (Ramalingegowda et al., 2020; Bao & Lewellyn, 2017; Saleem Salem Alzoubi, 2016; Sáenz González & García-Meca, 2014; Bowen et al., 2008) argue that institutional shareholders are sophisticated users of financial statements and have the required resources to collect and analyse the information they need, which will enable them to perform effective monitoring activities and reduce the opportunistic behaviours of managers. In the same vein, Agency theory suggests that due to their larger ownership interests, institutional shareholders have the incentive and the financial ability to participate in costly monitoring activities (Koh, 2003). Also, since institutional investors hold a significant number of shares in the firms, this will make them less likely to liquidate their shares. Instead, institutional investors, in this case, will become long-term investors who gain the benefits of monitoring their firms (Koh, 2003). Hence, these characteristics of institutional investors indicate that institutional shareholders are considered effective monitors in the firms, thereby limiting the managers' incentives to involve in earnings management practices.

Based on the argument suggesting the effectiveness of institutional shareholders, several studies have examined the association between institutional ownership and earnings management practices; however, the results were mixed. For instance, Alzoubi (2016) found that institutional ownership significantly reduces the magnitude of discretionary accrual (earnings management practices)in Jordanian firms. Similarly, Liu et al. (2018)found that domestic institutional investors are effective in constraining earnings management practices., In contrast to these results, Bao & Lewellyn (2017) and Sáenz González & García-Meca (2014) found that institutional ownership has no impact on constraining earnings management practices. This result might be attributed to the fact that corporate governance mechanisms might be substituted for each other. For example, suppose the board of directors' independence or market for corporate control is effective in the companies. In that case, firms might depend less on other internal corporate governance mechanisms like institutional ownership in the monitoring process.

Despite the divergence of evidence regarding the effectiveness of institutional ownership in reducing earnings management practices, this study argues that institutional investors in Saudi listed firms will provide effective monitoring and would be motivated to constrain earnings management practices in these firms. This is because the majority of institutional investors in Saudi firms are domestic. Since foreign investors are mainly minority investors in the Saudi market, they own only 12% of the shares in the Saudi Market (Foreign

ownership, 2020). Also, Saudi Arabia allowed foreign investors to invest in the Saudi Market in 2015 with various restrictions. For example, they cannot own more than 10% of the shares of the firms (Foreign ownership, 2020). Therefore, as the majority of institutional investors are domestic Saudi firms, they are expected to provide superior monitoring, since domestic institutional investors are better acquainted with local regulations, accounting standards, the local language, firm culture, and business model of the firms (Liu et al., 2018). These factors together might give domestic institutional investors an advantage in reducing their monitoring cost and thus facilitate their discovery of earnings manipulations (Liu et al., 2018). In addition, based on the findings of Liu et al. (2018) and Koh (2003), institutional blockholders are more effective in constraining earnings management practices due to the high number of shares they own in the firms. Thus, this study will argue that a higher level of institutional ownership will increase their monitoring effectiveness in detecting earnings management practices, since institutional investors will focus on long-term objectives and the exit option from the firms will become costly for them. As a result, they will be motivated to monitor managerial practices (Koh, 2003). Also, the managers of firms with a high level of institutional ownership will be discouraged from engaging in earnings management practices due to the absence of pressure from institutional investors to focus on short-term earnings objectives (Koh, 2003). Furthermore, institutional shareholders are sophisticated users of financial statements and have the required resources to collect and analyse the information they need, which will enable them to perform effective monitoring activities and reduce the opportunistic behaviours of managers(Ramalingegowda et al., 2020; Bao & Lewellyn, 2017; Saleem Salem Alzoubi, 2016; Sáenz González & García-Meca, 2014; Bowen et al., 2008). Also, institutional investors are better informed than other investors about the performance of the companies due to their professionalism, experience, and available resources. These factors together will enhance their monitoring in the companies with institutional invests (Lassoued et al., 2018). Hence, following the foregone discussion, this study postulates that a higher level of institutional ownership will lead to lower earnings management practices. The following hypothesis is therefore can be formulated:

H_{10}:: There is a negative and significant relationship between institutional ownership and earnings management practices.

3.11 Family ownership and earnings management

Prior studies explain the relationship between family ownership and earnings management through the use of two competing frameworks: the alignment and entrenchment effects (Bonacchi et al., 2018; Yang, 2010; Chen et al., 2020; Ali et al., 2007; Wang, 2006). The alignment effect hypothesis suggests that the interests of family shareholders are aligned with those of minority shareholders. Thus, they are less likely to expropriate the interests of minority shareholders through earnings management practices (Wang, 2006). In contrast, the entrenchment hypothesis suggests that controlling family ownership have a motivation to engage in opportunistic behaviour at the cost of minority shareholders by obtaining private benefits that are not distributed to other minority shareholders (Wang, 2006; Shleifer & Vishny, 1997). The entrenchment hypothesis is in line with the agency problem type II which occurs due to the conflict of interests between controlling shareholders and minority shareholders in the firms, rather than between managers and owners (Setia-Atmaja et al., 2011; Jaggi et al., 2009). Since controlling family shareholders might control the board and the management of their firms, they might make decisions at the expense of less powerful shareholders by using their positions and privileged access to superior information (Ali et al., 2007; Al-Okaily et al., 2020). Hence, entrenched family owners might have an incentive to use earnings management practices to hide their manipulations and prevent outside shareholders from uncovering their opportunistic practices (Chen et al., 2020). Previous studies (Bonacchi et al., 2018; Yang, 2010; Chen et al., 2020; Ali et al., 2007; Wang, 2006) provide empirical evidence that supports both hypotheses.

However, despite a competing theoretical framework and empirical evidence relating to the effect of family ownership in reducing earnings management practices (discussed in section 2.2.11), this study argues that family ownership in Saudi firms can reduce earnings management practices under the alignment hypothesis. This is due to several reasons. First, family ownership is concentrated in Saudi firms (Alhebri and Al-Duais, 2020). Thus, family ownership wealth will be closely tied to the firm's value. Hence, family shareholders will be motivated to monitor the managers' behaviour effectively and reduce their opportunities to engage in earnings management practices which might destroy the family firm's reputation , long-term performance and the family's wealth (Wang, 2006). Second, family shareholders often focus on long-term objectives in their firms. Thus, managers in family firms might not be motivated to engage in earnings management practices, as they face less pressure to meet short-term earnings objectives (Jaggi et al., 2009). Third, as family members might be involved in the management of the firms (Stockmans et al., 2013), they can monitor

managerial behaviour directly (Yang, 2010). This, in turn, minimises the free-riding problem inherent in the diffused shareholders context (Anderson and Reeb, 2003). Fourth, since earnings management is not in the family interest, family shareholders might be motivated to strengthen the corporate governance system in their firms in order to constrain earnings management practices (Setia-Atmaja et al., 2011; Stockmans et al., 2013).Empirically, several studies documented the alignment effect when examining the association between family ownership and earnings management practices. For instance, Wang (2006) empirically confirmed the alignment effect in his study by examining the impact of several measures of family ownership on earnings management practices. The study documented that founding family ownership increases the quality of earnings significantly among Fortune 500 firms. Likewise, Ali et al. (2007) observed that family firms have higher earnings quality than non-family firms. Also, Mengoli et al. (2020) reported that family firms report higher earnings quality than non-family firms. Also, the study documented that family firms in countries that have weak regulations and financial systems (insider-oriented countries) have higher earnings quality than non-family firms. These findings indicate that family ownership in the firms can replace the weak regulations in insider-oriented countries.

With the specific reference to the Saudi context, it seems that the alignment hypothesis is dominant in the Saudi firms that have family ownership. This is expected as Saudi Arabia is characterised by having a solid hierarchical social structure (Al-Twaijry et al., 2002; Haniffa & Hudaib, 2006), whereby the social ties between families and tribes are solid in the society (Al-Bassam et al., 2015; Hussainey & Al-Nodel, 2008; Al Nasser, 2020). Hence, these cultural characteristics might induce family shareholders to protect their firms. Also, family owners usually see their firms as valuable assets; thus, they are interested in preserving the family legacy to pass on the firms to the forthcoming generations (Boubaker et al., 2013). Thus, they will be motivated to reduce earnings management practices, since such practices might eventually damage the firm's reputation and destroy the family's wealth (Wang, 2006). Hence, based on the above argument, the following hypothesis can be formulated:

H_{11}: There is a negative and significant relationship between family ownership and earnings management practices.

3.12 Blockholders and earnings management

This study defines blockholders as individual shareholders who own more than 5% of the firm's total shares. Theoretically, prior studies have provided two contradictory views regarding whether the existence of substantial blockholders in the firms leads to decreased or increased earnings management practices. One stream of studies argue that blockholders have a significant incentives to actively monitor the managerial practices in the firms and serve as a and effect corporate governance mechanism. Specifically, (Shleifer & Vishny, 1997; Dou et al., 2018; Claessens et al., 2002; Shleifer & Vishny, 1986) argue that the presence of blockholders in the firms can ease the principal-agent problem inherent in a modern corporation, which is the conflict of interest between shareholders and managers. This is because ownership concentration gives the blockholders effective control of the company through their voting rights (Shleifer & Vishny, 1997). For example, they can replace underperforming managers (Shleifer & Vishny, 1986). Also, they can influence several important decisions in the company, such as executive pay and investment. Besides this, Claessens et al. (2002) state that, as blockholders own a large stake in the firms, they are motivated to increase the firms' value. They are also able to collect information and effectively monitor managerial practices. In addition, due to their large investment in the firms, large blockholders are more likely than small investors to monitor the managerial practices and engage in costly actions in order to protect their investments since blockholders are more likely to lose from opportunistic managerial behaviours than small investors (Claessens et al.,2002 ;Shleifer & Vishny, 1986). Hence, based on the above theoretical discussions, the presence of blockholders in the firms can reduce earnings management practices.

Another stream of studies argues that the presence of blockholders in the firms is ineffective in reducing EM practices. This argument based on agency theory that suggests the presence of concentrated ownership in the firms gives rise to type II agency problem which occurs due to the conflict of interest between controlling and minority shareholders (Claessens & Fan, 2002). This conflict of interest might encourage controlling shareholders to persuade the managers of their firms to engage in earnings management practices at the expense of minority shareholders (Claessens & Fan, 2002). The blockholders obtain substantial control over the managers due to the substantial number of shares they hold in the firm, which allows them to secure voting control (Shleifer & Vishny, 1986) such control might facilitate the opportunistic behaviours of the blockholders. This is because blockholders can control production of the accounting information and the accounting reporting policies (Fan &

Wong, 2002). This, in turn, allows them to influence the managers to report accounting information that serves the blockholders' interests rather than information that reflects the true performance of the companies (Fan & Wong, 2002). Furthermore, due to their effective control over the firm, blockholders can be entrenched, inasmuch as the board will not criticise their decisions which go against the interests of minority shareholders. This is because blockholders can elect directors to the board or influence the nominations of directors (Habbash, 2013; Guthrie & Sokolowsky, 2010). Those directors elected by the blockholders will act based on the interests of the controlling shareholders (Bouvatier et al., 2014). Also, they will be less likely to question the practices of the controlling shareholders since their reappointment might depend on their discretion (Jaggi et al., 2009). Thus, the governance system of firms that have blockholders is more likely to be weak (Lassoued et al., 2018). This, in turn, might encourage the blockholders to influence the managers to manipulate the reported earnings since they are less likely to encounter any resistance from the company's board of directors (Lassoued et al., 2018).

Despite the this conflicting theoretical views regarding the effectiveness of blockholders in reducing earnings management practices , this study supports the argument states that that the presence of blockholders in the firms will reduce the practices of earnings management. Since blockholders hold a large stake in the firms, earnings management practices would not be in their interests, because such practices might destroy the reputation of the firm and decrease its value if they become known to the market (Fan and Wong, 2002). In that event, outside shareholders might discount the share price accordingly which ultimately will decrease the blockholders' personal wealth. Based on this argument, blockholders' incentive to expropriate the resources of the firms for their private benefit will be reduced. This, in turn, will induce blockholders to monitor the managers and limit their opportunity to engage in earnings management practices, in order to protect the firm's reputation , value and their own wealth (Fan and Wong, 2002). Hence, the interests of the blockholders will be aligned with the firm's interests. Furthermore, prior studies documented that blockholders can provide effective monitoring and exercise governance through exit threats (Dou et al., 2018; Edmans, 2009). In addition, several studies assert that the presence of blockholders in firms will provide an efficient monitoring function because blockholders have the ability and the incentive to collect the required information and effectively monitor managerial practices (Claessens et al., 2002). In this regard, Dou et al. (2018) argue that blockholders can take costly actions to intervene in firms. For example, they might obtain seats on the board or on the top management team, bringing class action lawsuits and ousting underperforming managers. According to Dou et al. (2018), the intervention of blockholders in this way might

limit the opportunity of the managers to practise earnings management, as they could not conceal these practices from the blockholders. Also, managers might face the threat of being replaced as a result of such practices (Shleifer and Vishny, 1986).

However, based on the above discussion, in Saudi firms, it is expected that individuals who hold at least 5 % of the firm's shares might have the incentive to take costly action to intervene in the company and monitor the management. Since this percentage might reflect significant investment in the firms. This is because the firms in this study sample are large listed firms, which means that the small percentage of shares might reflect significant share value (Edmans, 2014).Thus, blockholders of Saudi firms will be motivated to provide effective monitoring in order to protect their significant investment .Also, according to the 2017 Saudi Corporate Governance Code, shareholders who own at least 5% of the firm's shares have the ability to add to the General Assembly's agenda any topics which they would like to have discussed at the meetings. Also, those shareholders can submit a request to the board of directors to invite the Ordinary General Assembly to convene; hence, it is expected that blockholders who own 5% of the firm's share might have the ability to influence the firm's decisions in Saudi listed firms.

Hence, consistently with the argument that blockholders will provide effective monitoring for the company and given the powers the blockholders have in the Saudi firms, this study will argue that the higher is the percentage of blockholders in Saudi firms, the lower will be the level of earnings management practices. Hence, the following hypothesis can be formulated:

H_{12}: There is a negative and significant relationship between blockholders' ownership and earnings management practices.

3.13 The role of family ownership in the association between the corporate governance mechanism and earnings management practices

In light of the discussion in section 2.2.13 regarding the behaviour of family owners under the alignment and entrenchment effect, it is an empirical question whether family ownership does behave under the alignment or entrenchment effect and how this will influence the relationship between corporate governance and earnings management under each effect. Following the empirical evidence reported by Wang (2006), This evidence suggests that at a low level of family ownership, the alignment effect dominates and family ownership significantly reduces the practices of earnings management. However, at a high level of family ownership, the entrenchment effect dominates over the alignment effect, and family ownership is more involved in earnings management practices. This is because owning a high number of shares in the firm enables the owner to control it, which makes them less affected by any attempts by minority shareholders to alleviate their entrenchment practices (Chen et al., 2020). In this case, they are expected to decrease the effectiveness of corporate governance practices in constraining earnings management practices. Since family shareholders might control the firm, they can influence the process of selecting and nominating the independent directors on the board (Jaggi et al., 2009; Al-Okaily et al., 2020). Those independent directors will be less objective and independent because their appointment and reappointment on the board might depend on the discretion of controlling family members (Bao and Lewellyn, 2017). Moreover, Ali et al. (2007) empirically observed that family firms disclose less about their corporate governance practices than non-family firms. Ali et al. (2007) argue that family firms might reduce the transparency of their governance practices to enable the appointment of family members on the board without experiencing intervention from non-family shareholders.

In contrast, owning low shareholding in the firm might not enable the family owner to control the firm; thus, they might not influence the firm's governance mechanisms. As suggested by the alignment effect, the family owner might be motivated to limit earnings management practices in the firm because these practices might destroy the firm's reputation, its long-term performance, and their wealth (Wang, 2006). As a result, family shareholders under the alignment effect might assist the governance mechanism in constraining earnings management practices. For instance, family shareholders might participate in monitoring managerial practices and prevent managers from engaging in earnings manipulations (Ali et al., 2007). Also, the practices of earnings management would

be less in family firms because managers of these firms, being under less pressure to meet short-term earnings objectives. (Jaggi et al., 2009). Since, family shareholders often focus on long-term objectives in their firms (Jaggi et al., 2009). Setia-Atmaja et al. (2011) argue that if the family shareholders are motivated to improve the future value of their firms, they might tend to appoint more independent directors on the boards.

Based on the above discussion, under the alignment effect hypothesis, family shareholders might strengthen the governance mechanism so as to limit earnings management practices. In contrast, the entrenchment hypothesis suggests that family shareholders might weaken the governance system in the firms in order to commit earnings management practices without being exposed by other shareholders. Therefore, it is an empirical question whether or not family shareholders moderate the effectiveness of their firms' governance. Hence, in recent years, there has been an increasing interest in examining the effectiveness of governance mechanism in constraining earnings management practices in family-controlled firms (Prencipe & Bar-Yosef, 2011; Jaggi et al., 2009; Setia-Atmaja et al., 2011; Stockmans et al., 2013; Wan Mohammad & Wasiuzzaman, 2019). These studies provide evidence that supports both the alignment and entrenchment hypotheses. For example, Prencipe and Bar-Yosef (2011) examine the role of the board independence and CEO duality in reducing earnings management practices on a sample of Italian family-controlled firms. First, the study found that independent directors and CEO duality are effective in constraining earnings management practices for the full sample of family- and non-family-controlled firms. However, in family-controlled firms, the presence of independent directors on the board significantly increased the practices of earnings management. This result indicated that the governance mechanism becomes ineffective in family-controlled firms. Likewise, Jaggi et al. (2009) examined whether the effectiveness of the independent directors in constraining earnings management practices is reduced in family-controlled firms. Based on a sample of listed firms in Hong Kong, the results show that a higher proportion of independent directors on corporate boards is associated with a lower level of earnings management practices. However, the effectiveness of the independent directors in constraining earnings management practices declined when family controlled the firms via both ownership concentration and the presence of family members on the board.

Unlike the above studies, several studies (Setia-Atmaja et al., 2011; Stockmans et al., 2013) have documented the effectiveness of the corporate governance mechanism in reducing earnings management practices in family-controlled firms, as suggested by the alignment hypothesis. For instance, Setia-Atmaja et al. (2011) evaluated the effect of board

independence in constraining earnings management practices in family-controlled firms listed on the Australian Securities Exchange (ASX). The findings indicated that the proportion of independent directors significantly reduced the practices of two types of earnings management in family firms; namely, current and long discretionary accrual. Also, they found that the presence of an independent chairman is effective in family firms only when there are effective independent directors who support him on the board. Hence, the study concluded that board independence is effective in mitigating type II agency problem and the entrenchment effect, which is a common problem in family-controlled firms. In line with these findings, Stockmans et al. (2013) found that the proportion of independent directors and CEO duality is effective in limiting the practices of earnings management in Belgian family firms that face type II agency problem due to a conflict of interest between controlling family shareholders and minority shareholders. However, the study did not find these board characteristics effective in limiting the earnings management practices in private family firms which did not suffer from an agency problem.

In the Saudi context, family members dominate the Saudi-listed firms where they hold seats on corporate boards of directors and own significant amounts of shares in the firms . Hence, it is interesting to examine the influence of family ownership on the association between corporate governance mechanisms and earnings management practices. Currently, there are no specific rules in Saudi Arabia that organise the participation of family members in Saudi firms. However, As discussed above, it is unclear whether family ownership behaves under the alignment or entrenchment effect and how this will influence the relationship between corporate governance and earnings management under each effect. Thus, this study follows Wang (2006) and Jaggi et al. (2009), who report evidence that the behaviour of family owners under the alignment or the entrenchment effect is contingent on their ownership level. Accordingly, this study hypothesised that when the family members own more than 30% of the firm's shares, they act under the entrenchment hypothesis. Thus, the relationship between corporate governance practices is positively associated with earnings management. However, when the family shareholders own less than 30% of the shares of the firms, family owners tend to act under the alignment effect, and the corporate governance becomes effective in constraining earnings management practices. The figure of 30% was used as a cut-off point to distinguish between high and low family ownership because the Saudi corporate governance code defines a controlling interest as that of shareholders who own 30% of the voting rights of the company (One-share-one-vote rule). Accordingly, they can influence the decisions and actions of the firm. Hence, based on the above arguments, the following hypotheses can be formulated :

H_{13a}: At a low level of family ownership, family shareholders will strengthen the effectiveness of corporate governance mechanisms measured by (SCGI) in reducing earnings management practices (alignment effect).

H_{13b}: At a high level of family ownership, family shareholders will reduce the effectiveness of corporate governance mechanisms measured by (SCGI) in constraining earnings management practices (entrenchment effect).

3.14 Summary of hypotheses development chapter

This chapter provided an in-depth discussion regarding the development of the 13 hypotheses in this study. Specifically, the chapter discussed the theoretical and empirical links that show the connection between corporate governance mechanisms and earnings management practices based on the agency theory perspective. Agency theory suggests that the divergence of interests between shareholders (the principal) and the managers (the agent) in public companies causes an agency problem (Jensen and Meckling,1976). This agency problem stems from several inherent factors in the modern corporation, such as the separation between the management functions and ownership, expensive enforceable contracts, and the information asymmetry between insiders of the firms and shareholders (Hoque, 2006; Jensen and Meckling, 1976). These shortcomings in the agency relationship between managers and absentee owners might induce the managers to involve themselves in earnings management practices (Davidson et al., 2005). Therefore, agency theory suggests employing an effective monitoring system, such as corporate governance mechanisms in the firms, to mitigate the agency problem in modern firms and to prevent opportunistic managerial behaviours. Based on this theoretical perspective, the current study hypothesised that well-governed firms (firms with a high score in complying with Saudi corporate governance provisions as measured by SCGI) perform better than poorly-governed firms in reducing earnings management practices. In addition, this study hypothesised that Saudi firms are likely to have lower levels of earnings management practices if they have a high percentage of strictly independent directors on the boards/audit committee, a high percentage of directors with multiple directorship positions, a larger board size, and their board of directors and audit committees meet more often. Additionally, this study hypothesised that Saudi firms with higher government ownership, institutional ownership, family ownership

and blockholder ownership have lower levels of earnings management practices. Finally, this study hypothesised that the effectiveness of corporate governance mechanisms would be reduced in Saudi firms with a high percentage of family ownership.

CHAPTER FOUR

Research Methodology

4 Introduction

This chapter aims to present the research design, methodology and data used in this study to answer the research questions. Hence, to present the research design of this study, this chapter begins by discussing the research paradigms, research strategy and research approach and their applications within the study context in section 4.1, 4.2, and 4.3 respectively. The sample selection process and the data sources are discussed in section 4.4. Then, section 4.5.1 discusses the measurement of the variables used in the compliance-index model, while section 4.5.2 discusses the measurement of the variables used in the equilibrium-variable model.

The chapter further discusses issues related to the construction of the SCGI. Specifically, the subsection 4.5.1.1.1 discusses the importance of using SCGC as a source of constructing the governance provisions in the SCGI. Also, subsection 4.5.1.1.2 discusses the sources used to collect the governance data for SCGI, while subsection 4.5.1.1.4 and 4.5.1.1.5 discusses the reliability and the validity of the SCGI.

This chapter also discusses in section 4.5.1.2.3 some of the most used earnings management models in the literature, followed by a discussion of their limitations. Finally, the justifications of the earnings management model used in this study and the robustness tests applied are discussed in the sections 4.5.1.2.4 and 4.5.1.2.5 respectively.

4.1 Research paradigm

According to Newsome et al. (1988), the research paradigm represents the specific framework within which the researcher's community functions and within which a particular perception of reality is produced. It also comprises research models, standards, norms of inquiry, and a set of methodologies and methods, all of which assure that any theoretical knowledge generated should be aligned with the viewpoint supported by the paradigm. However, two research paradigms are widely adopted in business and management studies: Positivism and interpretivism (Saunders and Lewis, 2019). According to Collis and Hussey (2014) and Saunders and Lewis (2019), five philosophical assumptions underpin the positivism and interpretivism paradigms. These are: Ontology, Epistemology, Axiology and Methodology.

First, Ontology is concerned with the perception of the researchers regarding the nature of the world and reality (Collis & Hussey, 2014). Positivists believe that social reality is objective and independent of the researcher. Also, they believe that there is only one reality exists. Thus, everyone has the same perception of that reality (Collis and Hussey, 2014 ;Saunders and Lewis, 2019). However, interpretivists consider reality inherently subjective because it is constructed in the social context (Collis & Hussey, 2014). interpretivists also believe that every individual has a unique perception of reality. Thus, multiple realities exist (Collis & Hussey, 2014) . According to the interpretivism belief, these multiple realities can be understood by examining the perceptions and the views of the participants in the research (Collis & Hussey, 2014).

This study adopts the positivism paradigm. Thus, the researcher believes that there is only one reality and that reality is objective and independent from the researchers and other individuals within the context of that reality. Therefore, this study will not consider individuals' perceptions regarding the practices of CG and EM in Saudi firms. Instead, this study uses an objective measure (i.e. governance index) to measure the compliance of Saudi firms with corporate governance provisions of SCGC. In addition, the study uses EM models to measure the practices of EM in Saudi firms. These measurements will provide objective and independent information regarding the quality of CG practices and the level of EM practices in Saudi firms.

Second, epistemology is concerned with what can be accepted as valid knowledge by the researcher. Also, the epistemology assumption entails examining the relationship between

the researcher and the subject of the research(Collis & Hussey, 2014). Researchers that adopted the positivism paradigm in their research believe that gaining knowledge about social reality will be through scientific methods (Gunbayi & Sorm, 2018). Thus, they believe that only phenomena that can be measured and observed will produce credible knowledge (Collis & Hussey, 2014 ;Saunders & Lewis, 2019). Since Positivists adopted the scientific approach in their research, they search for causal relationships in their data to generate law-like generalisations similar to those established by scientists (Saunders & Lewis, 2019). In addition, positivists assume that the researcher should be independent of what they research. Thus, they should observe and study the research phenomena in an objective manner (Collis & Hussey, 2014).In contrast, Interpretivists obtain knowledge from analysing the participants' perceptions and opinions regarding the research phenomena. Thus, interpretive knowledge includes participants' local values, culture, beliefs, and experience (Saunders & Lewis, 2019 ;Kivunja et al., 2017).This in turn, makes this knowledge not universal or generalisable like the knowledge produced through the scientific method (Saunders & Lewis, 2019;Gunbayi & Sorm, 2018).

Also, based on the interpretivism perspective, the researcher should interact with the participants' interpretations of the research phenomena in which the researchers should integrate their own beliefs and experiences into the interpretive process (Collis & Hussey, 2014 ;Saunders & Lewis, 2019).Thus, the interpretivism approach attempts to reduce the distance between the researchers and the subject of the research because this approach requires closer interaction between the researcher and the participants in their study (Kivunja et al., 2017).

Since this study adopts the positivism paradigm, this study measures corporate governance and earnings management and analyses the results using regression analysis to produce credible and objective knowledge. This knowledge will clarify the effect of corporate governance on EM practices in Saudi firms. Also, gaining knowledge about the impact of CG mechanisms on EM practices will be acceptable to the researcher because it is produced via a scientific approach (i.e. regression analysis). In addition, since the epistemological assumption under the positivism paradigm is concerned with the independence between the researchers and the subject of their research, this study empirically examines the effect of CG mechanisms on EM practices using a regression analysis approach. This practice allows the researcher to be independent of what is being researched. In addition, the researcher attempts to reduce bias in this study by using a proper sampling approach and seeking to be

objective in carrying out the research process, including the data collection and analysing process [18].

Third. Axiology assumption refers to the role of values and ethics in the research process, including how the researchers deal with their own values and the participants' values in their research (Saunders & Lewis, 2019). The implication of the axiological assumption on the positivism paradigm is that positivists recognised that they should adopt an objective stance in their research; thereby, they used scientific empiricist methods that produced accurate data and facts that free from human interpretation and bias. Hence, positivist conducted their research in a value-free way in which they detached themselves from the research data to avoid influencing the research findings (Saunders & Lewis, 2019 ;Collis & Hussey, 2014 ;Kivunja et al., 2017) .Unlike positivists, interpretivists adopt an empathetic stance in which their values and beliefs affect the interpretations of the research material and data(i.e. the perception and the views of the research participants) (Saunders & Lewis, 2019 ;Collis & Hussey, 2014 ;Kivunja et al., 2017).

Since this study adopted the positivism paradigm that requires the research to be free from any influence from the researcher, this study used regression analysis to examine the effect of the compliance of Saudi firms with SCGC on EM practices. The results of this evaluation are expressed in numbers. Hence, these results are objective and free from the researcher's own values and bias.

Fourth, the methodological assumption concerns with the process of conducting the research (Collis & Hussey, 2014). Positivist researchers adopt in their study the deductive approach in which they start their research by reading the existing theories that relate to the research phenomena and then test the hypothesis that emerges from these theories (Saunders & Lewis, 2019 ;Collis & Hussey, 2014) .In addition, positivist researchers study the cause-and-effect relationship between the variables in their studies and relate them to the theory used in their research. Since positivist researchers focus on measuring the research phenomena, variables used in their study will be measured and quantified to generate numerical data that can be analysed by using statistical procedures (Saunders & Lewis, 2019; Collis & Hussey, 2014 ;Creswell, 2014).However, interpretivists adopt the inductive approach in which they usually generate the theories from the observations of the research (Saunders & Lewis, 2019

[18] See the methodology chapter for further details on this matter.

;Collis & Hussey, 2014). Also, they focus on identifying patterns in research data to explain the phenomena of the study (Saunders & Lewis, 2019; Collis & Hussey, 2014 ;Creswell, 2014). Unlike positivist researchers who focus on measuring the research phenomena, Interpretivists focus on understanding individuals' interpretations regarding the research phenomena. Therefore, interpretivists collect qualitative data that are subjected to an in-depth analysis (Saunders & Lewis, 2019; Collis & Hussey, 2014 ;Creswell, 2014).

This study adopts the positivism paradigm, which implies following the deductive approach in conducting the research methodology. By using the deductive approach, this study adopts agency theory and then develops the research hypotheses that emerge from this theory. The researcher then measures the variables in this study, including governance and earnings management variables. This study employs regression analysis to examine the relationship between corporate governance and EM practices in Saudi firms

4.2 Research strategy

Research strategy is the plan that identifies the procedures that the researchers used to answer the research question (Saunders & Lewis, 2019). Quantitative research involves a strategy that focuses on collecting and examining numerical data (Saunders & Lewis, 2019). This strategy is based on a deductive approach that involves theory testing and developing a hypothesis to investigate the validity of the adopted theory (Collis & Hussey, 2014). According to Creswell & Creswell (2018), this quantitative research strategy emphasises the objective empirical examination of observable phenomena to test and understand the relationship between variables that underpin the research phenomena. Therefore, the quantitative research method uses statistical techniques to examine the change of the dependent variables caused by the change of one or more independent variables in the research (Creswell & Creswell, 2018).

To achieve the research objectives and answer the research questions, this study adopts a quantitative research strategy to examine the relationships between corporate governance mechanisms and earnings management practices and test the research hypotheses that deduced from the agency theory that adopted in this research. The researcher used annual reports and databases as the primary sources for collecting quantitative data in this study. The study analyses the data using regression analysis to obtain meaningful results from the quantitative data of the study.

4.3 Research approach

The research approach is the plan and the procedures for conducting the research (Creswell & Creswell, 2018) . It involves the intersection of research philosophy, research strategy, research method, data collection and analysis (Creswell & Creswell, 2018).The theory plays an important role in the selection of the research approach in which there are two main approaches to theory development: deduction and induction (Creswell & Creswell, 2018 ;Saunders & Lewis, 2019 ;Collis & Hussey, 2014)**.**

First, by using the deductive approach, researchers adopt a theory or a set of theories (theoretical framework) from the existing academic literature to test and verify the theory rather than develop it (Saunders & Lewis, 2019). Based on the adopted theory/ies, the researchers develop a hypothesis that can be tested for a causal relationship between variables identified by the theory (Collis & Hussey, 2014) .These hypotheses contain variables that researchers should define and measure (Creswell & Creswell, 2018). Then the researchers collect data relating to each variable in their studies to test the propositions of the hypothesis by using statistical procedures (Creswell & Creswell, 2018). If the analysis results are inconsistent with the premises of the hypothesis, the theory is considered false and should be either rejected or modified. However, if the results of the analysis align with the premises of the hypothesis, then the arguments of the theory are verified and confirmed (Saunders & Lewis, 2019). The research results that follow a deductive approach can be generalised to another setting if the researcher carefully selects a large sample for the study (Saunders & Lewis, 2019). Researchers that use the deductive approach should mitigate the bias issue in their research, control for alternative explanations for the research results and build a highly structured methodology to facilitate replications of their study (Creswell & Creswell, 2018). According to Saunders and Lewis (2019), the deductive approach is the most dominant approach in the natural sciences, where the laws serve as the basis for explaining and anticipating the research phenomena and predicting their occurrence. Based on the above discussion, a deductive approach is a scientific approach that emphasises on highly structured methodology, quantification of the variables and concepts in the research, generalisability of the findings and development of testable hypotheses; thus, the deductive approach is most likely to be underpinned by the positivist research philosophy (Saunders & Lewis, 2019).

Second, the inductive approach is employed in qualitative research. In this approach, the researcher collects qualitative data to explore the research phenomena (Saunders & Lewis,

2019). This data is analysed to identify patterns and themes to develop a theory that helps to understand the research phenomena (Saunders & Lewis, 2019). Thus, the knowledge production in this approach begins with data collection that is analysed to build a theory (Collis & Hussey, 2014). In this approach, the researcher collects qualitative data using methods such as interviews, observations and document analysis. This qualitative data could be texts or participants' words (Collis & Hussey, 2014). The researcher in the inductive approach will be interested in analysing the views and perceptions of the participants regarding the research phenomena (Saunders & Lewis, 2019) . Then the researcher interprets the meaning of this data based on their own perspective (Creswell & Creswell, 2018). Thus, by using the inductive approach, the researcher conducts their research in a subjective and biased manner (Collis & Hussey, 2014). Unlike the deductive approach, which requires a large sample of data, research that follows the inductive approach uses a small sample size because it focuses on the context and the actual location of the research phenomena (Saunders & Lewis, 2019). This factor, in turn, might limit the generality of the research findings (Collis & Hussey, 2014) . However, because the inductive approach is linked with humans and its emphasis on subjective interpretations of the research data, this approach is associated with the interpretivism paradigm (Saunders & Lewis, 2019).

This study adopts the deductive approach to examine the effect of corporate governance mechanisms on earnings management practices in Saudi-listed firms. Through the deductive process, agency theory is adopted to develop the research questions based on this theory. In addition, the researcher used agency theory to formulate the research hypotheses. In the deductive approach, the research hypotheses should be subjected to empirical examinations; thus, this study uses regression analysis to test them. The acceptance /rejection of the hypotheses will be based on whether the study's findings are in line/against the argument of the agency theory. The study defines and measures all the variables identified by the agency theory and provides an acceptable measurements for these variables based on previous studies in the literature.[19]

[19] see the methodology chapter for further details about this matter.

4.4 Sample Selection Process and Data Sources

The sample used in this study to examine the effect of corporate governance mechanisms on earnings management practices is drawn from all Saudi firms listed on Tadawul from 2006 to 2017. The sample of the study starts in 2006 for the following two reasons. First, the Saudi corporate governance code came into operation in 2006. Since then, Saudi firms have begun applying governance practices derived from this regulation. Thus, the researcher starts collecting governance data from 2006 since this will facilitate examining the compliance of the Saudi firms with the governance provisions of SCGC. Second, the data coverage for Saudi firms on the Tadawul website and DataStream is very low before 2006. Thus, the researcher did not start the data collection before 2006 due to poor data coverage. The sampling period ended in 2017 because it was the latest year for which data was available for Saudi-listed firms at the time of collecting the data.

Table 4.1 presents a summary of the sample selection process. Table 4.1 Panel A demonstrates that the initial sample consists of 1726 firm-years observations for all Saudi firms listed on Tadawul from 2006 to 2017. 732 firm-years are excluded from the initial sample because 452 firm-years belong to the Financials sector, 43 firm-years have missing accounting/governance data,55 are suspended and merged firms, and 182 firm-years belong to Energy, Telecommunication Services and Utilities industries. The firms that belong to Energy, Telecommunication Services and Utilities industries have been excluded because the firms in these industries have fewer than seven observations of data in each year from 2006-2017.

The rationale behind the exclusion of the above firms is as follows. First, the study excludes the Financials sector, which includes banks, insurance and diversified financial companies for several reasons.

(i) The type of accrual accounting in financial firms is significantly different from that in non-financial firms (Saona et al., 2020). Additionally, financial firms' reported earnings and cash flow from operations are considerably different from those of non-financial firms (Abdou et al., 2020).

(ii) The Financials sector in Saudi Arabia is heavily regulated. It has specific regulations for its corporate governance and accounting practices, which are different from the regulations set for non-financial firms. For instance, the Saudi

Arabian Monetary Agency (SAMA) issued in 2012 the 'Principles of Corporate Governance for Banks Operating in Saudi Arabia'. This governance code is set specifically for banks and financial institutions listed on the Saudi stock exchange Tadawul (Al-Faryan, 2020). However, all non-financial firms applied the 2017 Saudi Corporate Governance Code, which is different from the governance code applied by financial firms. Moreover, listed financial firms used different accounting standards than non-financial firms: the financial firms applied local accounting standards issued by SAMA, which were specifically set for financial institutions firms in Saudi Arabia, and they also used IFRS, while non-financial firms applied local accounting standards issued by Saudi Organization for Certified Public Accountants (SOCPA).

(iii) Financial firms are excluded from the study sample in order to facilitate the comparison of the study's findings with prior studies (e.g., Abdou et al., 2020; Sáenz González & García-Meca, 2014; Jiang et al., 2008; Setia-Atmaja et al., 2011; Saona et al., 2020), which also excluded the financial firms from their sample.

Second, to improve the estimation of earnings management models used in this study, the models are estimated for each industry-year with at least 7 observations[20]. Therefore, any industry groups that have less than 7 observations by year are excluded from the sample, following prior studies (Peasnell et al., 2000; Klein, 2002; Chen et al., 2015). Accordingly, the researcher excludes Energy, Telecommunication Services and Utilities industries from the study's sample because these industries contain less than 7 observations in each year from 2006-2017. The sample firms are classified into industry groups based on the Global Industry Classification Standard (GICS), which TADAWL uses.

[20] For further details about the estimation of the earnings management models in this study, please see section 4.5.1.2.4.

Table 4.1: Summary of the sample selection

Panel A: **Sample selection for firm-year observations**													
Sample selection process												Firm-year observations	
All listed Saudi firms on Tadawul from 2006 to 2017												1726	
Minus firms belonging to Financials sector												(452)	
Minus firms that have missing Accounting/governance data												(43)	
Minus suspended and merged firms												(55)	
Minus firms belonging to Energy, Telecommunication Services and Utilities industries												(182)	
Total excluded firms												(732)	
Final sample												994	
Panel B: Sample by years													
Sample years	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Total
No. of observations	38	52	61	68	81	86	92	94	98	101	111	112	994
Percent	3.82	5.23	6.14	6.84	8.15	8.65	9.26	9.46	9.86	10.16	11.17	11.27	
Panel C: Sample by industry													
Sample Industries					Firm-year observations						Percent		
Materials					397						39.94		
Industrials					172						17.30		
Consumer discretionary					161						16.20		
Consumer staples					179						18.01		
Health Care					14						1.41		
Real Estate					71						7.14		
Total					994								

Table 4.1 Panel C presents the industry breakdown of the firm-year observations in the study's sample using the GICS classification. It appears from Table 4.1 that the majority of the sample firms are from the Materials industry sector (39.94%), followed by Consumer Staples (18.01%) and Industrials (17.30%). In contrast, firms belonging to the Health Care and Real Estate industries have the lowest representation in the sample, accounting for 1.41 % and 7.14% of the sample firms, respectively. The remaining firms are from Consumer discretionary, which represent 16.20% of the sample firms. Finally, Panel B of Table 4.1 demonstrates that the observations of the study's sample are almost evenly distributed for every year during the sample period.

It is worth mentioning that the study's data are a combination of time series and cross-sectional data, allowing the composite of panel data, which has several advantages, such as minimising the multicollinearity problem between the variables and increasing the degrees of freedom (Wooldridge, 2010). In addition, combining time-series and cross-sectional data provides further assurance regarding whether the observed cross-sectional relationship between corporate governance mechanisms and earnings management practices remains the same over time (Elmagrhi et al., 2016; Abdou et al., 2020; Ntim et al., 2012).

Finally, regarding the sources of the study's data, the researcher manually collected all the corporate governance data from the firms' annual reports. These reports were downloaded from three sources: the Argaam (2021) website, the Tadawul (2021) website, and the Saudi listed firms' websites. Accounting and Financial data were obtained from the DataStream database, whereas ownership data were collected from the Thomson Reuters database.

4.5 Research Design

The study's primary research question is to examine the effect of corporate governance mechanisms on earnings management practices in Saudi listed companies. Thus, to answer the research questions of this study, the study adopted the compliance-index model to examine the relationship between firm-level corporate governance and earnings management practices. Also, the study used the equilibrium-variable model to investigate the relationship between individual corporate governance characteristics and earnings management. The following subsections discuss the measurements of the variables used in both models.

4.5.1 The Compliance-Index Model

The compliance-index model seeks to examine the relationship between firm-level corporate governance and earnings management practices. The firm-level corporate governance was measured by the Saudi corporate governance index. However, the earnings management practices were calculated using the modified Jones model (Dechow et al. 1995). The following subsections discuss the measurements of the variables used in the compliance-index model. Mainly, subsection 4.5.1.1 explains the independent variable: the Saudi Corporate Governance Index (SCGI). Subsection 4.5.1.2 discusses the measurement of the dependent variable: earnings management practices, while Subsection 4.5.1.3 discusses the control variables.

4.5.1.1 The Independent Variable: The Saudi Corporate Governance Index (SCGI)

The Saudi Corporate Governance Index (SCGI) was used in the study to measure the level of compliance with the Saudi corporate governance code (2017). Additionally, the SCGI was used to examine the relationship between corporate governance mechanisms and earnings management practices using the compliance-index model. As demonstrated in Table 4.2, the SCGI contains 142 corporate governance provisions covering 6 broad aspects (sub-indices), namely (i) The Board of Directors; (ii) Board Sub-Committees; (iii) The Disclosure and Transparency; (iv) The Internal Control; (v) The Rights of Shareholders; and (vi) The Implementation of Corporate Governance.

One of the Saudi studies that construct a governance index to measure the corporate governance practices in Saudi companies is Al-Bassam et al.'s (2015) study. Al-Bassam et al. (2015) constructed a broad governance index based on all requirements of the Saudi corporate governance code published in 2006. The study measured the compliance of 80 Saudi listed firms from the year 2004 to 2010 with this code. The index contains 65 corporate governance provisions, and all these provisions were unweighted.

Unlike Al-Bassam et al.'s (2015) study, the current study builds a broad governance index that incorporates the majority of the requirements of the 2017 Saudi corporate governance code. However, due to the similarities between 2006 Saudi corporate governance code and the 2017 one (except the introduction of new governance provisions in the 2017 Saudi corporate governance code), the index of the current study is similar to Al-Bassam et al.'s (2015) index. Hence, it is necessary to acknowledge that this study adopts Al-Bassam et al.'s

(2015) index and updates the index with new governance provisions set out in the 2017 Saudi corporate governance code. In addition to the 2017 Saudi corporate governance code, the study also derives some of the SCGI provisions from the 2016 Listing Rules issued by the Capital Markets Authority of Saudi Arabia (CMA) and the 2015 Companies Act issued by the Ministry of Commerce in Saudi Arabia. These three sources of governance regulations were carefully reviewed by the researcher (eight times) in order to extract the new governance provisions for the SCGI.

Al-Bassam et al.'s (2015) index has 65 governance provisions and has four governance categories: (i) the board of directors and board sub-committees; (ii) disclosure and transparency; (iii) internal control and risk management; and (iv) the rights of shareholders and the general assembly. The current study adopts Al-Bassam et al.'s (2015) index with some modifications. First, the study removed 4 governance provisions from Al-Bassam et al.'s (2015) index as follows. The first provision removed is 'Drafting policies of board and committees appointment'. This provision is removed because it is no longer a requirement in the 2017 Saudi corporate governance code. Second, 'Whether the firm's directors own at least 1,000 firm shares' is removed because it is no longer a requirement under the Companies Act 2015. Third, 'Whether the risks facing the firm are disclosed' is removed because the 2017 Saudi corporate governance code requires Saudi firms to disclose three types of risk facing the firms, which are operational risks, financing risks and market-related risks. Therefore, the researcher deleted 'Whether the risks facing the firm are disclosed' from Al-Bassam et al.'s (2015) index because it does not contain specifications regarding the type of the risks. However, as a substitute of this deleted governance provision, the researcher added three governance provisions in the SCGI that aim to capture the compliance of the Saudi firms in disclosing the three types of the risks, which are operational risks, financing risks and market-related risks. Fourth, the researcher removed 'Whether the firm discloses social contributions' from Al-Bassam et al.'s (2015) index, because the majority of the previous studies in the governance literature do not include the social responsibilities section in their governance index. (e.g., Bekiris & Doukakis, 2011; Black et al., 2017 ; Black et al., 2014; Cassell et al., 2012).

Accordingly, after deleting the aforementioned governance provisions, the study adopted the remaining 61 governance provisions from Al-Bassam et al.'s (2015) index. Next, the researcher developed 81 new governance provisions, derived mainly from the 2017 Saudi corporate governance code, the 2016 Listing Rules and the 2015 Companies Act. These 81 governance provisions spanned all the six categories of the 2017 SCGI. Finally, the

researcher constructed the current SCGI of this study by combining both sets of governance provisions that come from Al-Bassam's et al. (2015) 2006 SCGI (61 governance provisions) and 2017 SCGI (81 governance provisions). Therefore, the current study's SCGI has in total 142 governance provisions.

To the best of the researcher's knowledge, there are only four studies in the literature that construct a governance index in order to measure the corporate governance practices in Saudi companies.(Hussainey & Al-Nodel, 2008 ;Fallatah et al.,2013 ; Al-thuneibat 2016 ; Al-Bassam et al.,2015). For example, Hussainey and Al-Nodel (2008) constructed a governance disclosure index and used a content analysis approach to measure the level of the disclosure of corporate governance practices on Saudi companies' websites. The study developed the index based on disclosure items selected by prior studies. The disclosure items were unweighted as each company was given a score of one if the information about the governance item was available on the company's website or zero otherwise.

Similar to Hussainey & Al-Nodel's (2008) study, Fallatah et al. (2013) constructed a corporate governance index for Saudi listed firms. The initial selection of the governance provisions was based on the results of previous studies as well as the 2006 Saudi corporate governance code. However, Fallatah et al. (2013) used the PCA method to construct the categories and the related governance items of each category in their index. The PCA method produced four corporate governance categories: chairman independence, insider ownership, ownership monitoring, and audit committee independence. These categories had in total 7 governance items. The weighting of these items was accomplished via the PCA method, by applying the variable weight for each corporate governance item in the sample.

Unlike Fallatah et al.'s (2013) study, Al-thuneibat (2016) examined the effect of the compliance of Saudi listed companies with corporate governance requirements regarding the independence, competence and scope of work of internal audit, the board of directors and the audit committee on earnings managing practices. They used a questionnaire-based governance index to collect data from financial managers and internal auditors regarding the compliance of 90 Saudi listed companies with corporate governance requirements issued by the board of the Capital Markets Authority (CMA). The index consisted of 54 questions.

Finally, Al-Bassam et al. (2015) constructed a broad governance index based on all requirements of the Saudi corporate governance code published in 2006. The study measured

the compliance of 80 Saudi listed firms from the year 2004 to 2010 with this code. The index contains 65 corporate governance provisions, and all these provisions were unweighted.

Although prior Saudi studies attempted to construct governance indices, these governance indices have several limitations. For example, Fallatah et al.'s (2013) governance index has a limited number of governance provisions, and Hussainey & Al-Nodel's (2008) governance index could be criticised for selecting governance provisions developed by prior studies in developed countries. This, in turn, might make their governance index not applicable to the Saudi context. However, Al-thuneibat's (2016) study could be criticised for using a small sample size (only 90 companies) and covering only one year. Additionally, the study did not cover the compliance of Saudi firms with other important corporate governance requirements, such as the requirements of disclosure and transparency section in the Saudi corporate governance code. Moreover, this study may not accurately measure the extent of the compliance of the Saudi firms with corporate governance requirements because its governance measure depends on the perception of financial managers and internal auditors of the companies, which may involve considerable subjective judgment. This view is supported by Bozec & Bozec (2012), who criticise questionnaire-based indices of corporate governance as involving a great deal of bias since companies tend to provide inaccurate information about their governance practices . Bozec & Bozec (2012) argue that companies might overestimate the quality of their corporate governance, or they may not acknowledge the deficiencies in their corporate governance system. Such practices might make the measure of corporate governance quality subject to respondents' bias (Klapper & Love, 2002).

Therefore, the current study addresses these limitations that existed in prior Saudi governance indices by constructing an SCGI that contains 142 governance provisions extracted from the 2017 Saudi corporate governance code, the 2016 Listing Rules and the 2015 Companies Act. Hence, the SCGI might be considered broader in scope than previous Saudi governance indices and more applicable to the Saudi context, since it derives from Saudi governance regulations[21].

Unlike Al-thuneibat's (2016) study, the current study uses a self-constructed corporate governance index and depends on the disclosure of corporate governance information in the

[21] Section 4.5.1.1.1 includes a detailed discussion regarding the applicability of the Saudi corporate governance code for Saudi listed companies.

companies' annual reports for the collection of governance data. Since, collecting corporate governance disclosure data from annual reports gives a higher degree of objectivity because the research measures the quality the corporate governance based on the disclosure of governance information in the annual reports, without any subjective interference from the researcher or the respondents (Florou & Galarniotis, 2007).

In addition, this study provides a more comprehensive picture of the level of compliance of the Saudi companies with the 2017 Saudi corporate governance code, because the majority of the governance requirements set out in this code have been added to the index in the form of governance provisions. Since the 2017 SCGI has 142 governance provisions, this is considered the largest index currently employed in Saudi studies. Additionally, the current study has a larger sample size than prior Saudi studies (Hussainey & Al-Nodel, 2008; Fallatah et al., 2013; Al-thuneibat, 2016; Al-Bassam et al., 2015), as the majority of listed companies on TADAWUL from the year 2006 to 2017 have been included in the study's sample[22]. Therefore, the study sample consists of 112 Saudi listed firms for a total of 994 firm-year observations. Such a large sample size improves the generalisability of the results for all Saudi listed companies, because all the firms, which have different sizes, are included in the sample, therefore helping to avoid the sample selection bias (Omar & Simon, 2011).

[22] See section 4.4 for further details regarding the process of selecting the study's sample.

Table 4.2: Full list of the Saudi Arabian corporate governance provisions in the SCGI based on the SCGC

Corporate governance disclosure index			
SCGI theme/type	**SCGI items**	**Range of the score**	**Total score per theme**
(i)Board of Directors	**Board of Directors**		27
	1. Whether the roles of chairperson and CEO are split.	0-1	
	2. Whether the chairperson is an independent.	0-1	
	3. Whether the chairperson is not a chair of other committees in the firm.	0-1	
	4. Whether the names of board members are disclosed.	0-1	
	5. Whether directors are clearly classified into executive, NED and independent.	0-1	
	6. Whether the majority of directors are non-executive.	0-1	
	7. Whether the independent directors do not hold 5% or more of the shares of the company.	0-1	
	8. Whether the independent directors are not related to anyone who owns 5% or more of the shares of the company.	0-1	
	9. Whether the independent directors do not represent a legal person that holds 5% or more of the shares of the company.	0-1	
	10. Whether the independent directors are not related to any member on the board of the company.	0-1	
	11. Whether the independent directors are not related to any senior executive of the company.	0-1	
	12. Whether the independent directors are not board members of any company within the group of the company on whose board they serve.	0-1	
	13. Whether the independent directors are not and have not been employees in the company during the preceding two years.	0-1	
	14. Whether the independent directors have no direct or indirect interest in the contracts executed for the Company's account.	0-1	
	15. Whether the independent directors' remuneration does not exceed SAR 200,000 or 50% of their remuneration of	0-1	

	the last year for the membership of the board or any of its committees, whichever is less.		
	16. Whether the independent directors do not engage in a business where they compete with the company or conduct business in any of the company's activities.	0-1	
	17. Whether the independent directors have not served for more than nine years, consecutive or inconsecutive, as board members of the company.	0-1	
	18. Whether the number of independent members is not fewer than two members or one third of the members of the Board, whichever is more.	0-1	
	19. Whether the board members have no direct or indirect interest in the contracts executed for the company's account.	0-1	
	20. Whether the number of board members is not fewer than 3 and not more than 11 members.	0-1	
	21. Whether the firm discloses the directors' biography.	0-1	
	22. Whether directors' membership of other firms' boards is disclosed.	0-1	
	23. Whether the board members do not act as members of the board of directors of more than five listed firms.	0-1	
	24. Whether the board of directors' meetings are disclosed.	0-1	
	25. Whether individual directors' meeting records are disclosed.	0-1	
	26. Whether the board meets 4 times at least during the year.	0-1	
	27. Whether at least half of the number of the board members attended the board meeting provided that the number of attendees shall not be less than three.	0-1	
(ii)Board Sub-Committees	**Audit Committee**		50
	28. Whether the audit committee has been established.	0-1	
	29. Whether the audit committee's jurisdiction is disclosed.	0-1	
	30. Whether the audit committee members are disclosed.	0-1	
	31. Whether the committee members' biography is disclosed.	0-1	
	32. Whether the audit committee is composed of a sufficient number of non-executives.	0-1	

	33. Whether the audit committee chairperson is disclosed.	0-1	
	34. Whether the audit committee chairperson is independent.	0-1	
	35. Whether the chairman of the board is not a member of the audit committee.	0-1	
	36. Whether the committee has no executive directors among its members.	0-1	
	37. Whether at least one of the audit committee members is independent.	0-1	
	38. Whether the number of the audit committee members is not fewer than 3 and not more than 5.	0-1	
	39. Whether at least one of the audit committee members specialises in financial and accounting matters.	0-1	
	40. Whether the audit committee meetings are disclosed.	0-1	
	41. Whether the audit committee meetings record is disclosed.	0-1	
	42. Whether the audit committee meets at least 4 times during the financial year of the company.	0-1	
	Nomination Committee		
	43. Whether the committee has been established.	0-1	
	44. Whether the committee's jurisdiction is disclosed.	0-1	
	45. Whether the committee members are disclosed.	0-1	
	46. Whether the committee members' biography is disclosed.	0-1	
	47. Whether the committee is composed of a sufficient number of non-executives.	0-1	
	48. Whether the committee chairperson is disclosed.	0-1	
	49. Whether the committee chairperson is independent.	0-1	
	50. Whether the nomination committee has no executive directors.	0-1	
	51. Whether at least one of the nomination committee members is independent.	0-1	
	52. Whether the number of nomination committee members is not fewer than 3 and not more than 5.	0-1	
	53. Whether the committee meetings are disclosed.	0-1	
		0-1	

	54. Whether the committee meeting record is disclosed.	0-1	
	Remuneration Committee		
	55. Whether the committee has been established.	0-1	
	56. Whether the committee's jurisdiction is disclosed.	0-1	
	57. Whether the committee members are disclosed.	0-1	
	58. Whether the committee members' biography is disclosed.	0-1	
	59. Whether the committee is composed of a sufficient number of non-executive members.	0-1	
	60. Whether the committee chairperson is disclosed.	0-1	
	61. Whether the committee chairperson is independent.	0-1	
	62. Whether the remuneration committee has no executive directors.	0-1	
	63. Whether at least one of the remuneration committee members is independent.	0-1	
	64. Whether the number of remuneration committee members is not fewer than 3 and not more than 5.	0-1	
	65. Whether the committee meetings are disclosed.	0-1	
	66. Whether the committee meetings' record is disclosed.		
	Risk Management Committee		
	67. Whether a risk management committee is established.	0-1	
	68. Whether the risk management committee's jurisdiction is disclosed.	0-1	
	69. Whether the committee members are disclosed.	0-1	
	70. Whether the committee members' biography is disclosed.	0-1	
	71. Whether the committee is composed of a sufficient number of non-executives.	0-1	
	72. Whether the committee chairperson is disclosed.	0-1	
	73. Whether at least one of the committee members specialises in financial and accounting matters.	0-1	
	74. Whether the number of the committee members is not fewer than 3 and not more than 5.	0-1	

(iii)Disclosure and Transparency	75. Whether the committee meetings are disclosed. 76. Whether the committee meetings' record is disclosed. 77. Whether the committee meets at least twice per year. **Disclosure and Transparency** 78. Whether the names of the executive management members are disclosed. 79. Whether the executive management bibliography is disclosed. 80. Whether the board has disclosed the procedures adopted to inform its members about the suggestions and the notes of the shareholders about the performance of the company. 81. Whether the board has disclosed the means used to assess the performance of its members. 82. Whether the firm has disclosed its training plan for board members. 83. Whether the recommendation of the audit committee regarding the appointing of internal auditors is disclosed. 84. Whether the contradiction between the recommendations of the audit committee and the resolutions of the board of directors regarding the appointment, dismissal, assessment or remuneration of an external auditor is disclosed. 85. Whether the firm's ownership structure is disclosed. 86. Whether the share ownership of the board of directors is disclosed. 87. Whether the share ownership of the senior executive team is disclosed. 88. Whether the remuneration policy for the board of directors is disclosed. 89. Whether the remuneration policy for the executive team is disclosed. 90. Whether the board's detailed compensation is disclosed. 91. Whether the CEO's compensation is disclosed. 92. Whether the Chief Financial Officer (CFO) is disclosed. 93. Whether the names of the five senior executives who have received the highest remuneration are disclosed.	0-1 0-1 0-1 0-1 0-1 0-1 0-1 0-1 0-1 0-1 0-1 0-1 0-1 0-1 0-1 0-1 0-1 0-1 0-1 0-1 0-1	44

	94. Whether the remuneration of the members of committees is disclosed.	0-1	
	95. Whether the board's compensation does not exceed the maximum.	0-1	
	96. Whether the remuneration committee states clearly the relationship between the granted remuneration and the policies of the remuneration committee.	0-1	
	97. Whether the firm has disclosed if any director or a senior executive has waived their remuneration, or a statement of no waiving is disclosed.	0-1	
	98. Whether the firm has disclosed if any shareholders have waived their rights to dividends, or a statement of no waiving is disclosed.	0-1	
	99. Whether the firm does not provide any loan for board members.	0-1	
	100. Whether the policy of dividends is disclosed.	0-1	
	101. Whether the company's requests of shareholders' records are disclosed.	0-1	
	102. Whether the related party transactions are disclosed.	0-1	
	103. Whether transactions between the firm and board of directors' members are disclosed, or the declaration of no transaction is disclosed.	0-1	
	104. Whether transactions between the firm and senior executives are disclosed, or the declaration of no transaction is disclosed.	0-1	
	105. Whether information on operational risks facing the company is disclosed.	0-1	
	106. Whether information on financing risks facing the company is disclosed.	0-1	
	107. Whether information on market-related risks facing the company is disclosed.	0-1	
	108. Whether the principal activities of the firm are disclosed.	0-1	
	109. Whether the firm's strategies and objectives are disclosed.	0-1	
	110. Whether the future expectations of the business activities of the firm are disclosed.	0-1	
	111. Whether the firm's five-year performance is compared.	0-1	
	112. Whether the firm's operational performance is disclosed.	0-1	
	113. Whether the geographic analysis of the revenues of the firm and its subsidiaries are disclosed.		

	114. Whether the firm's loans are disclosed, or whether a statement of no loan confirmation is disclosed.	0-1	
	115. Whether a statement of the amount of payments due to be paid to government bodies is disclosed.	0-1	
	116. Whether the debt instruments activities of the firm are disclosed, or whether a statement of no debt instrument is disclosed.	0-1	
	117. Whether details of any punishments imposed on the firm by a supervisory body are disclosed, or a declaration of no punishment is disclosed.	0-1	
	118. Whether the firm provides a statement about not departing from the accounting standards.	0-1	
	119. Whether a narrative as a going concern is provided.	0-1	
	120. Whether a statement of the value of any investments made or any reserves set up for the benefit of the employees of the company is disclosed, or a statement of no investment is disclosed.	0-1	
	121. Whether the firm has any programmes to motivate its employees.	0-1	
	The Internal Control		
(iv)The Internal Control	122. Whether the results of the effectiveness of the internal control system are disclosed.	0-1	5
	123. Whether information related to the adequacy of the company's internal control system is disclosed.	0-1	
	124. Whether the firm declares that its internal control system has been prepared on a sound basis and has been implemented effectively.	0-1	
	125. Whether the firm has clear control procedures for risk management.	0-1	
	126. Whether the financial reports are approved by the board of directors, CEO and CFO.	0-1	
	Rights of Shareholders		
(v)Rights of Shareholders	127. Whether the General Assembly (GA) meets at least once a year.	0-1	13

	128. Whether the GA meeting agenda was disclosed on the Tadawul website.	0-1	
	129. Whether the names of board of directors members who attended GA meetings are disclosed.	0-1	
	130. Whether the shareholders have the right to appoint others to attend the GA meetings on their behalf.	0-1	
	131. Whether the firm applies a one vote one share policy.	0-1	
	132. Whether the firm announces a GA meeting at least 10 days prior to the date of the meeting.	0-1	
	133. Whether the firm immediately informs the Stock Exchange website about the results of the GA meeting.	0-1	
	134. Whether the GA meetings convenes within six months following the end of the firm's financial year.	0-1	
	135. Whether the GA meeting was chaired by the chairman of the board.	0-1	
	136. Whether the general rights of shareholders are disclosed.	0-1	
	137. Whether the percentage of the net profit that is going to be distributed to the shareholders is disclosed.	0-1	
	138. Whether the firm publishes its quarterly/ annual financial statements within 15/75 days after the end of the financial period of these financial statements.	0-1	
	139. Whether the company appoints an external auditor.	0-1	
(vi)Implementation of Corporate Governance	**Implementation of Corporate Governance**		3
	140. Whether the firm has a corporate governance committee.	0-1	
	141. Whether the firm drafted its own corporate governance code.	0-1	
	142. Whether a narrative regarding compliance/non-compliance with SCGC is provided.	0-1	

4.5.1.1.1 The importance of using the Saudi Corporate Governance Code as a source of Saudi Corporate Governance provisions in the Index

The current study argues that the SCGI is applicable to the Saudi context, since it derives from Saudi governance regulations, in which all the 142 governance provisions in the index were extracted from the 2017 Saudi corporate governance code, the 2016 Listing Rules and the 2015 Companies Act.

The applicability of the Saudi corporate governance code as a source for SCGI can be explained by the differences between the corporate governance systems in Anglo-American countries and non-Anglo-American countries (developing countries). For example, the Anglo-American system, which is popular in the UK and US, is characterized by being market-oriented (Millar et al., 2005). According to Cuervo (2002), the companies in this system are characterized by the following features.

(i) Ownership is widespread. As a result, conflicts of interest mainly occur between shareholders and managers (Bozec & Bozec, 2012);
(ii) The board of directors has control over the company, coupled with external directors who are independent from the managers.
(iii) There is a developed market for corporate control and takeover. Therefore, companies in the Anglo-American countries face the threat of takeover, which acts as another governance mechanism for disciplining the managers (Bozec & Bozec, 2012).

In contrast, the block-holder-based system of governance is characterized by the following features (Cuervo, 2002).

(i) Companies in this regime have concentrated ownership structure, mainly dominated by banks and families.
(ii) The controlling shareholders have a major controlling stake in the company. Additionally, they act as a governance mechanism in disciplining the managers. However, the main concern in the block-holder-based system is the conflict of interest between majority and minority shareholders (Bozec & Bozec, 2012).
(iii) The board of directors is controlled by internal directors or outside directors who are linked to the large shareholders in the companies.
(iv) Capital markets are illiquid and have limited controllability.

(v) Managers have implicit contracting and a close personal trust relationship between them.

(vi) There is no developed and active market for corporate control. Therefore, incumbent managers do not face the risk of hostile takeover bids (Cuervo, 2002).

The block-holder-based system of governance mainly exists in developing countries (Millar et al., 2005).

Due to these differences in the corporate governance system between the Anglo-American countries and the developing countries, different corporate governance arrangements are needed for companies in each system. For example, in developing countries, due to the concentration of ownership and the possible influence of these controlling shareholders on the board of directors, Bozec & Bozec (2012) state that companies that have controlling shareholders should focus on governance arrangements that ensure the independence of the board of directors from the controlling shareholders. However, companies with a dispersed ownership structure should focus on the independence of the board of directors from the management (Bozec & Bozec, 2012).

In addition, it can be noted from the comparison of Cuervo (2002) that the market for corporate control is not developed and active in developing countries as in developed countries. Therefore, managers do not face the risk of being disciplined by hostile takeover bids (Schnyder, 2012). Since, the market for corporate control acts as a governance mechanism for the managers: evidence suggests that managers may be replaced after a takeover (e.g., Lel & Miller, 2015). Therefore, the governance arrangements used to align the interests of the managers and the owners differ across developed and developing countries. According to Schnyder (2012), the effective monitoring of management in the Anglo-American system can be achieved through the risk of hostile takeover, independent boards, incentive pay and high levels of disclosure and transparency. In contrast, due to the absence of the threat of hostile takeover and the high level of disclosure and transparency in the block-holders governance system, monitoring of managers can be achieved in the companies that have this governance system through large shareholders in the companies.

However, due to the absence of an active market for corporate control in developing countries (Cuervo, 2002), it is expected that companies will not rely on this governance mechanism for disciplining the managers (Schnyder, 2012). Moreover, since the capital market is not developed in the developing countries, it is expected that companies will not

adopt anti-takeover provisions. Therefore, measuring corporate governance level/quality by a corporate governance index such as Gompers et al.'s (2003) G-score, which focuses on anti-takeover measures, would not be relevant in developing countries like Saudi Arabia. Therefore, using this index on Saudi listed companies will not be applicable, since Saudi companies do not have a developed market for corporate control and do not depend on it as an external governance mechanism. Bebchuk & Weisbach (2010) and Chauhan et al. (2016) support this argument and state that Gompers et al.'s (2003) G-score focuses on anti-takeover defences, which is not relevant for companies that have controlling shareholders. Likewise, Bozec & Bozec (2012) indicate that using indices constructed in Anglo American countries for evaluating the governance quality of companies in non-Anglo-American countries might harm the internal validity of the studies, since these indices will produce inaccurate results regarding the quality of corporate governance.

In a related manner, Bebchuk & Hamdani (2009) argue that studies should develop separate governance indices tailored for firms with concentrated ownership and for firms that have a widespread ownership structure. This is because the governance arrangements that are crucial for firms with widespread ownership might not be relevant for firms with controlling shareholders. For example, antitakeover defences such as poison pills will determine the degree to which the widely held firm is exposed to discipline by the market for corporate control. In firms that have concentrated ownership, hostile takeover is uncommon even in the absence of antitakeover defences. Therefore, takeover defences are of significant importance for outside shareholders in widely held companies; however, they are not important for investors in firms with majority shareholders. Therefore, using a single governance index to assess the governance for firms with and without controlling shareholders might not provide an accurate results regarding the quality of the corporate governance of the firms because (i) a single governance index might give less weight to anti-takeover defences, which are important governance elements for widely held firms, or (II) the single index might give more weight to governance provisions that are irrelevant for firms with controlling shareholders, such as items for anti-takeover defences. Hence, using a single governance index for firms that have controlling shareholders and firms that do not have controlling shareholders will lead to producing inaccurate results regarding the quality of the governance mechanism of the companies (Bebchuk & Hamdani, 2009). Therefore, it is better to use local governance regulations to construct a governance index for the companies, because such a governance index will incorporate relevant governance provisions for the companies.

In this regard, Black et al. (2017) empirically found that constructing a governance index by using country-specific governance elements increased the construct validity of the governance index. This is because these country-specific governance elements reflect the local norms, institutions, and data availability of the governance arrangements in the companies. Hence, applying governance indices developed based on governance codes in developed countries such as the UK or US, or applying governance indices based on features of governance mechanisms in developed countries, such as Gompers et al.'s (2003) G-score, would result in inaccurate evaluation of the governance quality in Saudi companies.

Saudi Arabia is a developing country, and it shares most features of the block-holder-based system of governance. For example, Saudi Arabia has concentrated ownership, mainly by government and families (Alhebri & Al-Duais, 2020). Additionally, the market for corporate control is not developed as in developed countries. The high concentrated ownership found in Saudi listed companies might create a condition for a new agency problem (agency problem type II) where there is conflict of interest between majority and minority shareholders (Aguilera et al., 2012). Although, controlling shareholders have the incentive and the power to discipline the managers of the company, the existence of the conflict of interest between majority and minority shareholders poses the risk that majority shareholders may pursue their benefit at the expense of minority shareholders' interests (Aguilera et al., 2012).

In this regard, Aguilera & Desender (2012) argue that, because different agency problems might exist, any governance index should contain governance provisions that deal with the specific type of agency problem that exists in the companies. Otherwise, the governance index would suffer from major limitations, as it would not reflect the actual governance quality of the companies. Therefore, listed companies in Saudi Arabia need governance arrangements that solve the agency problem found in Saudi listed companies (agency problem type II). The 2017 Saudi governance code developed by the Capital Market Authority in Saudi Arabia introduced specific corporate governance provisions that aim to solve the type II agency problem.

The type II agency problem indicates that majority shareholders might act against the interests of minority shareholders and they might exert undue influence on the board of directors (Habbash, 2013). In response to this issue, the 2017 Saudi corporate governance code required specific terms of independence to be met by the independent directors on the Saudi boards. First, it required that independent directors should not own 5% or more of the

shares of the company. Second, in order to prevent possible collusion between the independent directors and the majority shareholders in the companies, the Saudi governance code required that the independent directors should not have a blood relationship with any shareholders of the company who owned 5% or more of the shares of the company. Third, the independent directors should not have a blood relationship with other independent directors of the company or its subsidiaries.

The focus on the blood relationship in these requirements stems from the fact that Saudi listed companies have concentrated ownership mainly in the hands of families (Alhebri & Al-Duais, 2020). These requirements are in line with the suggestions of Bozec & Bozec (2012), who suggested that companies with controlling shareholders should focus on governance arrangements that ensure the independence of the board of directors from the controlling shareholders in companies. However, these terms of independence required for independent directors will be placed in the current study index (provisions no. 7-17) in order to check the independence of the independent directors of Saudi companies.

In addition, in order to protect minority shareholders' interests, the Saudi corporate governance code (2017) focused on increasing the disclosure and the transparency of the companies. For example, the Saudi code required that the board should disclose the procedures adopted to inform its members about the suggestions and the notes provided by the shareholders regarding the performance of the company. Additionally, the policy of dividends and the related party transactions should be disclosed in the annual reports of the companies. These requirements are transferred in the form of governance provisions in this study governance index (provisions no. 80, 100 and 102 respectively). Therefore, the Saudi corporate governance index used in this study will be relevant for assessing the corporate governance system in the Saudi listed companies, since it covers the governance provisions that were designed to solve the specific type of agency problem that exists in block-holders governance systems, such as in Saudi Arabia.

4.5.1.1.2 The sources of corporate governance data for the Saudi Corporate Governance Index

Since the study used a self-constructed corporate governance index, the study depended on the disclosure of corporate governance information in the annual reports of the companies for collecting governance data. Therefore, the study used these annual reports as the main source for hand-collecting the corporate governance information.

There are several reasons that justify the use of the annual reports of the companies as a source for hand-collecting the corporate governance information. First, the 2017 Saudi corporate governance code, the 2016 Listing Rules and the 2015 Companies Act mandated that all Saudi listed companies should issue annual reports at the end of the financial year. These reports include the board of directors' report and financial statements. These reports are mandatory and subject to scrutiny by shareholders, analysts, creditors, and supervisory and regulatory bodies such as the Saudi Capital Market Authority (CMA) and the Saudi Arabia Ministry of Commerce. This, in turn, means the annual reports of the Saudi firms are less likely to contain misleading information about the governance of the companies (Florou & Galarniotis, 2007). Hence, they might be considered a reliable source for collecting corporate governance data (Omar & Simon, 2011).

Second, unlike using a questionnaire-based index where the corporate governance data are collected from analysts, or from the financial managers and internal auditors of the companies, collecting corporate governance data from the annual reports provides a higher degree of objectivity, because the researchers will measure the quality of corporate governance based on the disclosure of governance information in the annual reports without any subjective interference (Florou & Galarniotis, 2007). Bozec & Bozec (2012) criticised questionnaire-based indices of corporate governance as involving a great deal of bias, since companies tend to provide inaccurate information about their governance practices. Bozec & Bozec (2012) argue that companies might overestimate the quality of their corporate governance, or they may not acknowledge the deficiencies in their corporate governance system. Such practice might make the measure of the corporate governance quality subject to respondents' bias (Klapper & Love, 2002). Therefore, a better way to measure the corporate governance mechanism of the companies is to collect the governance information from the companies' annual reports.

Third, extracting the corporate governance data from the annual reports of the companies might increase the reliability of the study. Reliability in research means the extent to which

the experiment or the test produces similar results if re-conducted several times (Carmines & Zeller, 1979). This reliability might be said to be achieved if multiple coders coded the same text independently by using the same instrument, and they all yielded similar results (reproducibility) (Krippendorff, 2013). Therefore, in order to conduct the reliability test, the measurement instrument (governance index) and the coded materials (annual reports) need to be available to other researchers in order to replicate the results of the study. Nerantzidis (2016) indicates that since the governance index scores are obtained from the disclosed governance information in the annual reports, the replication of the study would be feasible for other researchers because the corporate governance information in the annual reports is constant and does not change over time.

Fourth, Saudi Arabia adopted a 'comply or explain' regime in corporate governance. This approach means that companies are required to comply with all provisions of corporate governance code. However, If the companies are not able to comply with a certain governance provision, they should provide an explanation in their annual reports regarding the reasons for non-compliance with this provision. Hence, companies' annual reports might be considered the most suitable source for governance information regarding the compliance of Saudi listed companies with the Saudi corporate governance code, since the company will disclose their compliance as well as their justifications for non-compliance in their annual reports.

Fifth, using the annual reports to collect governance data is in line with previous studies conducted in Saudi Arabia (Fallatah et al., 2013; Al-Bassam et al., 2015) and in other countries (Chauhan et al., 2016; Shan, 2015), which in turn might improve the comparability of the study.

4.5.1.1.3 The SCGI Scoring and Weighting Schemes

There are two methods widely used to score the corporate governance provisions in the index. These are binary coding and weighted scoring (Isukul & Chizea, 2017). Binary coding refers to the method of assigning equal weight to each corporate governance provision in the index. The researchers, by using the binary coding approach, give the value of 1 if the provision is present in the annual report of the company or zero if the provision is absent from the annual report of the company (Bozec & Bozec, 2012). This approach is also called the unweighted approach or the dichotomous approach (Al-Najjar & Al-Najjar, 2017). Hence, an unweighted index is an index scored through the binary coding approach (Isukul & Chizea, 2017).

Contrary to the binary coding approach, the weighted scoring approach occurs when the researcher assigns a different weight to each corporate governance provision in the index. For instance, Bhatt & Bhatt (2017) constructed a weighted index and assigned different weights to governance provisions in the index. Bhatt & Bhatt (2017) assigned a score of 1 if the firms had non-executive directors on the board, whereas a score of 2 was assigned if the firms had a director who was both non-executive and independent.

However, there is no one method of scoring that is superior to the other; in fact, each method has its own strengths and limitations. Regarding the weighted scoring approach, this approach has received great criticisms in the literature. First, a number of studies (Bozec & Bozec, 2012; Isukul & Chizea, 2017; Baker & Anderson, 2010) have criticised the weighted scoring approach because it involves great deal of subjectivity, as researchers assign different weights to the governance provisions based on their subjective views, personal knowledge and experience. This leads to the possibility of introducing bias in measuring the corporate governance practices in the company (Isukul & Chizea, 2017). This issue occurs because the governance literature is lacking a well-established theory that determines the weights of different governance provisions in the index (Brown et al., 2011; Schnyder, 2012; Larcker et al., 2007).

The second criticism of the weighted scoring approach is that there is no agreement in the literature regarding which corporate governance mechanism should receive a higher weight than the others (Schnyder, 2012). For example, Bebchuk et al. (2009) considered that voting rights as the most important corporate governance mechanism and consequently should receive a higher score than other governance provisions. In contrast, Bhagat et al. (2008)

placed a higher weight on board of directors provisions, as they argued that the board of directors was the most importance corporate governance mechanism, since the corporate law authorised the board of directors to make and approve all the important decisions in the company.

The third criticism related to the weighted scoring approach is that the weighting of the corporate governance provisions performed by the researchers might not be consistent with the importance placed on them by the financial market participants (Baker & Anderson, 2010). This problem occurs because of the absence of a defined theory to guide the researchers in assigning the weights for different corporate governance provisions, which help reflecting the degree of importance of each corporate governance provision (Larcker et al., 2007; Florou & Galarniotis, 2007). In the same vein, Black et al. (2017) and Schnyder (2012) question the accuracy of weighted corporate governance indices, as researchers may lack the necessary experience and knowledge in identifying the importance and the related weights for each corporate governance provisions. Despite the great criticism that the weighted scoring approach received from prior studies, Owusu & Weir (2016) argue that this approach has the advantage of at least exhibiting the relative importance of corporate governance provisions in the index.

Unlike the weighted scoring approach, the binary coding approach (unweighted scoring/index) has been criticised for not reflecting the degree of the importance of each corporate governance mechanism in the index (Florou & Galarniotis, 2007; Owusu & Weir, 2016; Isukul & Chizea, 2017). This is because this approach assumes that all the corporate governance provisions are equally important and all of them should receive an equal weight (Florou & Galarniotis, 2007). Thereby, each corporate governance provision will be given a score of one if the company discloses it in the annual report or zero otherwise. However, Bozec & Bozec (2012) indicate that applying this approach will lead to constructing less subjective corporate governance index than the weighted governance index, as the researchers in constricting the unweighted index do not assign weights to different corporate governance provisions (Baker & Anderson, 2010).

The binary coding approach has received great support in the literature. For example, Bozec & Bozec (2012) strongly recommend that future studies to use the binary coding approach in scoring corporate governance provisions, as they believe that this approach might result in a better measure for corporate governance systems than the weighted corporate governance index, since researchers do not interfere in the weight of the corporate

governance provisions. Therefore, the binary coding approach might alleviate any potential bias and subjectivity that exist in the weighted corporate governance index (Bozec & Bozec, 2012). Similarly, Isukul & Chizea (2017) and Scholtz & Smit (2015) state that the binary approach might help in addressing the issue of the subjectivity that exists in the weighted scoring approach, which results from allocating different weights to corporate governance provisions based on the researchers' discretion. Hence, the binary approach may increase the objectivity and the transparency of the evaluation of corporate governance mechanisms in the company (Florou & Galarniotis, 2007).

Therefore, given the advantages of the binary scoring approach discussed above, the current study adopts the binary scoring approach in scoring the governance provisions of SCGI in order to construct an objective unweighted corporate governance index. In addition, unweighted governance indices have been used intensively in the literature (e.g., Black et al., 2012; Al-Bassam et al., 2015; Ntim, Opong, & Danbolt, 2012; Farag et al., 2014). Therefore, using an unweighted governance index might improve the comparability of the results of the current study with prior studies.

4.5.1.1.4 Reliability of Constructed SCGI

Reliability in research refers to the extent to which the experiment or the test produces similar results if re-conducted several times (Carmines & Zeller, 1979). In Content Analysis there are three types of reliability: stability, reproducibility and accuracy (Krippendorff, 2013).

First, stability relates to the extent to which the process of coding produces the same results if repeated over time (Krippendorff, 2013). Data on stability can be generated under a test-retest condition, in which a single coder re-codes the text twice and compares the coding results in the first and second round (Krippendorff, 2013). The more the results are stable, the greater is the reliability of the instrument (Krippendorff, 2013).

Second, reproducibility can be achieved if multiple coders code the same text independently by using the same instrument and they all yield similar results (Krippendorff, 2013). Measuring the reproducibility requires data generated under a test-test condition (Krippendorff, 2013). For example, two coders code the same text separately using the same coding instrument and then compare their results. The more the results are similar, the greater is the reliability of the instrument (Krippendorff, 2013).

Third, accuracy concerns the extent to which the coding results correspond to the standard coding results (Krippendorff, 2013). In order to achieve accuracy, the researcher must obtain the data under a test-standard condition. Under this condition, the researcher must compare the performance of their coding procedures with the performance of the coding procedures that are agreed by professionals to be correct (Krippendorff, 2013).

The study assesses the reliability of the governance index through the stability form only, because this study is conducted by a single researcher. Therefore, in order to assess the stability of the coding instrument (SCGI), the researcher followed the following steps. First, all the annual and board of directors' reports of all Saudi listed firms published from 2006 - 2017 were read entirely and carefully by the researcher to ensure that the firms were not penalised for non-disclosure of non-applicable governance items. In this stage, the researcher made some modifications to the corporate governance index. For example, the researcher found the availability of information related to measuring the independence of the independent directors based on the 11 independence criteria stated by the 2017 Saudi corporate governance code. Therefore, these 11 independence criteria were added as governance provisions to the SCGI. Second, the final list of the governance provisions of the index, and the coded materials, were critically discussed with the two supervisors of this study. Accordingly, the researcher revised the governance provisions in the index based on the feedback and comments of both supervisors and then produced the SCGI.

In order to perform the reliability test, a pilot study was conducted. It also aimed to use the coding instrument (SCGI) to check the effect of the compliance of Saudi firms with the SCGC's provisions on reducing earnings management practices in Saudi listed firms. The pilot study was conducted on a random sample of 22 Saudi listed firms (161 firm-year observations) from the year 2006-2017. However, to assess the stability of the coding instrument, the researcher was required to collect data in addition to the main data of the study. This data was obtained by duplicating the main data of the study prior to the final coding (Krippendorff, 2013). Therefore, 161 corporate governance reports of Saudi firms were coded in the first round. Then any mistakes identified by the researcher in the first round were corrected in the second round. The third round of coding was conducted for the entire sample (994 firm-year observations). The results of the third round were comparable to those of the two former rounds, indicating the stability of the coding process in this study.

4.5.1.1.5 Validity of Constructed SCGI

In content analysis, validity means " the extent to which any measuring instrument measures what it is intended to measure" (Carmines & Zeller, 1979, p.17). In this study, two types of validity have been achieved, namely face validity and construct validity.

4.5.1.1.5.1 Face validity

Face validity concerns the extent to which the coding instrument appears to measure what it is intended to measure in the study (Krippendorff, 2013). In order to achieve face validity, the researchers should seek advice from experts in the field of the study about the suitability of the instrument to measure what he/she intends to measure in the study (Krippendorff, 2013). Hence, following Pillai & Al-Malkawi (2016) and Baalouch et al. (2019), the constructing of the governance index, the selecting of the governance provisions and the decision rules have been checked and reviewed by the two supervisors of the study, who are experts in the governance field.

4.5.1.1.5.2 Construct validity of Saudi Corporate Governance Index

Construct validity concerns the extent to which the measures of the construct or the observable proxy (e.g., governance index) are correlated with each other and whether they contribute to measuring the same underlying concept (e.g., governance mechanism) (Krippendorff, 2013; Beattie et al., 2004). This study follows Black et al. (2017) in measuring the construct validity of the SCGI by using Cronbach's α and the average inter-item correlations as an indication of the extent to which the SCGI is a better proxy or measure of the underlying concept of governance in this study. Black et al. (2017) used two approaches to measure the construct validity of the index. First, they measure Cronbach's α and the average inter-item correlations for all governance elements in the whole index; second, they measure Cronbach's α and the average inter-item correlations for the elements within each sub-index independently. This approach is important because it reveals the contribution of each sub-index to the overall Cronbach's α value for the index. Additionally, it demonstrates the construct validity for each sub-index independently.

According to Black et al. (2017), Cronbach's α is the measure of the correlations between several items in the instrument and ranges from 0 to 1. It is defined as follows:

$$\alpha = \frac{nr}{1+(n-1)r} \qquad (1)$$

where (n) refers to the number of governance provisions in the index and (r) refers to the mean correlation between the provisions (Black et al., 2017). The high value of Cronbach's α indicates that the governance provisions in the index measure the underlying concept appropriately. In contrast, a low value means that the provisions in the governance index are not capturing well the underlying concept that it intended to measure (Black et al., 2017). As demonstrated in Equation 1, the Cronbach's α value comes mostly from the positive inter-item correlations between the elements of the index (Elshandidy et al., 2015). If these elements of the index contribute collectively to measuring the same dimension of the governance, they are expected to be positively correlated to each other, and the Cronbach's α value will be high (more than 0.70) (Black et al., 2017; Elshandidy et al., 2015). However, it is suggested by Black et al. (2017) that overly high positive inter-item correlations between two elements in the index might harm the validity of the instrument. This is because an extremely high positive inter-item correlation between two elements in the index might indicate that these two elements are not sufficiently distinct from each other and both of them might measuring the same aspect of governance. Hence, one of them should be removed from the index, or two of them might be combined in one provision. Therefore, a moderate mean inter-item correlation between the elements of the index is preferable (Black et al., 2017). For example, Clark and Watson (1995) suggested that the inter-item correlation between the elements of the index should be in the range of 0.15 and 0.20.

Table 4.3: Cronbach's α test for Saudi corporate governance index and its subindices

	Cronbach's α	Average inter-item correlations	No. of elements	Cronbach's alpha if the sub-index deleted
(A) All SCGI provisions	0.96	0.16	142	-
Sub-indices				
(B) Board of Directors subindex	0.84	0.21	27	0.95
(C) Board Sub-Committees subindex	0.94	0.25	50	0.93
(D) Disclosure and Transparency subindex	0.88	0.16	44	0.95
(E) Internal Control subindex	0.61	0.25	5	0.95
(F) Rights of Shareholders subindex	0.67	0.17	13	0.96
(G) Implementation of Corporate Governance subindex	0.39	0.12	3	0.95

4.5.1.1.5.2.1 Assessment for overall governance index

Following Black et al. (2017), the construct validity of the SCGI was assessed based on the results of Cronbach's α value and inter-item correlation. Table 4.3 reports the values of Cronbach's α and the mean inter-item correlations for elements in the SCGI and for the elements within each SCGI subindex. Panel A in Table 4.3 presents the Cronbach's α and mean inter-item correlations for the 142 governance provisions in the SCGI. It is demonstrated in Table 4.3 Panel A that the Cronbach's α value is high (0.96) for the SCGI, suggesting that the index is a strong instrument, and its score reflects well the governance practices in the Saudi companies. There is agreement in the literature that Cronbach's α above 0.70 indicates that the instrument is measuring well the underlying concept of the study (i.e., governance) (Sarhan & Ntim, 2018; Allegrini & Greco, 2013; Black et al., 2017; Pillai & Al-Malkawi, 2016).

The average inter-item correlation in panel A is positive and moderate (0.16), suggesting that all governance provisions in the SCGI are not similar to each other and each of them contribute distinctively to measuring the governance concept. Additionally, the inter-item correlation of SCGI (0.16) is within the range suggested by Clark and Watson (1995), which is between 0.15 and 0.20. Similarly. Black et al. (2017) found that the mean inter-item correlation was low in their indices, ranging from 0.05 to 0.25, combined with high Cronbach's α values (0.70 to 0.94). Black et al. (2017) ascribe the low inter-item correlation found in the governance indices to two factors: first, as governance indices are composed of binary governance elements, these types of elements tend to generate low correlations between them. Second, low inter-item correlation indicates that the governance elements in the index were selected to be distinctive from each other; thus, they are not highly correlated. Therefore, Black et al. (2017) concluded that the combination of low mean correlations between the governance elements and high Cronbach's α value indicates that the governance elements in the index have been well-structured to capture the corporate governance concept in the study.

4.5.1.1.5.2.2 Assessment for sub-indices

Panels B-G in Table 4.3 report the assessment of the construct validity for each of the sub-indices comprising the SCGI. Panels B-G in Table 4.3 demonstrate that the Cronbach's α for all sub-indices ranges from 0.39 for the Implementation of Corporate Governance subindex to 0.94 for the Board Sub-Committees subindex. However, it is noted that the Cronbach's α values for all sub-indices are smaller than the Cronbach's α value of the overall SCGI. This is because each sub-index has a lower number of provisions compared to the SCGI[23] (Black et al., 2017). However, most of the Cronbach's α values for all sub-indices are considered reasonably high. For example, panel B, C and D demonstrate that the Board of Directors, Board Sub-Committees and Disclosure and Transparency sub-Indices have Cronbach's α values above 0.80, which indicates a strong construct validity of these sub-indices. These high Cronbach's α values were combined with moderate values of inter-item correlations ranging from 0.16 for the Disclosure and Transparency subindex to 0.25 for the Board Sub-Committees subindex, suggesting that the provisions in all three sub-indices are positively correlated to each other but are not close to identical. Hence, since the Board of Directors, Board Sub-Committees and Disclosure and Transparency sub-indices have high Cronbach's α values and low inter-item correlations values, this combination implies that each governance provision within each of the sub-indices is contributing sufficiently to the measurement of the governance concepts of these sub-indices.

Panels E and F of Table 4.3 demonstrate that the Cronbach's α values for the Internal Control and the Rights of Shareholders sub-indices are 0.61 and 0.67 respectively. These Cronbach's α values are slightly lower than the Cronbach's α values for the other sub-indices. This occurs because the Internal Control and the Rights of Shareholders sub-indices have fewer provisions (5 and 13 respectively) than other sub-indices. Nonetheless, Black et al. (2017) consider that a Cronbach's α value above 0.60 is a reasonably high value. In Panels E and F, the mean inter-item correlations for the Internal Control and the Rights of Shareholders sub-indices are positive and not so high, ranging from 0.17 to 0.25. This indicates that the selection of provisions within the sub-indices was successful, as each provision contributes distinctively in capturing a different aspect of the governance concept of these sub-indices.

[23] Black et al. (2017) state that one of the weaknesses of the Cronbach's α test is that the value of the Cronbach's α is affected by the number of the items in the index and the degree of the correlations between the elements of the index. Therefore, one can get a high Cronbach's α value from a large number of elements that are weakly correlated. Additionally, a high Cronbach's α value can be obtained from a small number of items that strongly correlated with each other.

In panel G, the Implementation of Corporate Governance sub-index has a very low Cronbach's α value (0.39), with a relatively low inter-item correlation (0.12), which indicates that the construct validity is limited in this sub-index. However, this low Cronbach's α value and low inter-item correlation might be due to the low number of provisions in this sub-index (3). Similarly, Black et al. (2017) found a low Cronbach's α value for a sub-index with a small number of items in their study .

It is noteworthy that the Implementation of Corporate Governance sub-index is constructed with only three provisions because the researcher follows the guideline of the Saudi corporate governance code of 2017. The code allocates only three governance provisions under this section, which are "Whether the firm has a corporate governance committee", "Whether the firm drafted its own corporate governance code", and "Whether a narrative regarding compliance/non-compliance with SCGC is provided". Therefore, due to the importance of these three provisions, which are intended to measure the implementation of the company's corporate governance practices, this sub-index was not removed from the whole SCGI. Furthermore, additional tests were conducted to see whether the value of the Cronbach's α for the overall SCGI would be increased after the exclusion of the Implementation of Corporate Governance sub-index. The results in panel G indicate that the value of the Cronbach's α decreased to 0.95. This implies that the removal of this sub-index would not improve the construct validity of the overall SCGI. In contrast, the removal of the Implementation of Corporate Governance sub-index would decrease the Cronbach's α value for the overall SCGI. Hence, in this case, this sub-index should remain as a part of the overall SCGI in order to protect the construct validity of the SCGI.

Furthermore, the study follows Pillai and Al-Malkawi (2016) and Nerantzidis (2016) in conducting an additional test to obtain the value of Cronbach's α for the overall SCGI after the removal of each of the sub-indices from the main index. According to Pillai and Al-Malkawi (2016), the index is considered a good instrument for measuring corporate governance practices if the Cronbach's α value is decreased after the removal of one of the sub-indices from the main index. This in turn, constitutes evidence that the sub-indices are correlated with each other and that all of them contribute collectively to measuring the underlying concept of governance. However, if the value of Cronbach's α increases after the deletion of a certain sub-index, this indicates that this sub-index has low correlation with other sub-indices and is not as useful as other sub-indices for measuring the underlying

concept of governance. Hence, it should be removed from the main index (Pillai & Al-Malkawi, 2016).

The results under the column of 'Cronbach's alpha if sub-index deleted' in Table 4.3 demonstrate that the value of the Cronbach's α has decreased slightly after the deletion of each sub-index, indicating that all sub-indices contribute collectively to measuring different aspects of the corporate governance concept in this study.

Hence, given the results of assessment of the construct validity of both the overall SCGI and the sub-indices, it can be inferred that the SCGI is a strong instrument for measuring the governance system of Saudi firms. This is for two reasons. First, the SCGI has yielded high Cronbach's α values for the overall index and for most of its sub-indices. Second, the inter-item correlation for the elements of the main index and sub-indices is within the moderate range. These findings suggest that each element of the index contributes to measuring the underlying concept of governance in Saudi firms. Additionally, all sub-indices are capturing different aspects of the corporate governance system.

4.5.1.2 The Dependent Variables: Earnings management

4.5.1.2.1 Earnings Management Definition

There is little consensus in the literature about what earnings management actually means. Thus, several definitions of earnings management have been proposed by researchers. The definitions of earnings management in the literature mainly refer to either opportunistic or beneficial behaviour. Among opportunistic perspectives, Healy and Wahlen (1999, p. 368) state that "Earnings management occurs when managers use judgment in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers". Likewise Schipper, (1989, p. 92) defines earnings management as a "purposeful intervention in the external financial reporting process with the intent of obtaining some private gain". Akers et al. (2007) share the same opportunistic view, defining earnings management as a decision taken by managers in order to manipulate reported earnings.

Yet it is important to note that Generally Accepted Accounting Principles (GAAP) allow managers to exercise their judgement in preparing financial statements. For example, managers under GAAP have flexibility in selecting different inventory evaluation methods,

estimating the value of bad debt allowance or pension liability, and identifying the revenue recognition time (Degeorge et al., 1999). In addition, the accrual basis under GAAP gives managers an opportunity to exercise their discretion in determining the reported income in a given period (Xie et al., 2003). For instance, if managers want to increase reported income they can achieve that by advancing the recognition of the revenue through booking credit sales or estimating low allowance for bad debts (Teoh et al., 1998). Thus, given the flexibility provided in accounting standards, earnings management might be practised by utilising accrual to increase or decrease the reported net income (Al-thuneibat, 2016). Thus, prior studies (He & Yang, 2014; Peasnell et al., 2005; Xie et al., 2003; Baralexis, 2004) defined earnings management in general as legitimate practices when they achieved within the boundaries of GAAP, while illegitimate earnings management practices are those practices that involve violation of GAAP, which represent fraudulent financial reporting. Although earnings management is a legal practice, it is still considered an ethical issue in the accountancy profession (Merchant & Rockness, 1994).

However, Ronen and Yaari (2007) criticise Healy and Wahlen's (1999) definition because they consider all earnings management as an opportunistic practises . Ronen and Yaari (2007) argue that earnings management might be beneficial for investors when it conveys useful information. For example, investors usually prefer to see the persistent earnings are separate from abnormal earnings that have occurred during a sudden increase in demand within a short period. Thus, when managers use earnings management for the purpose of allowing investors to distinguish between these two components of earnings, in this case earnings management will lead to an improvement in the information value of the reported earnings rather than distort them (Ronen andYaari ,2007). This view is supported by Arya et al. (2003, p. 111) who state that "earnings management reduces transparency is a simplistic idea. A fundamental feature of decentralized organizations is the dispersal of information across people. Different people know different things, and nobody knows everything. In such an environment, a managed earnings stream can convey more information than an unmanaged earnings stream". Thus, it is inaccurate to considerer earnings management from the negative perspective only. This is because the opportunity that allowed managers to exercise their judgment through GAAP, and discretionary accrual in particular, may provide better communication to investors about the underlying performance of the companies. This argument also gains theoretical support from the stewardship theory perspective. This theory assumes that managers are good stewards of the companies' resources and are motivated to serve the interests of the owners/ principal (Donaldson & Davis, 1991; Davis et al., 1997). Davis et al. (1997) demonstrated that

stewardship theory assumes that stewards behave collectively rather than individually. This is because their ultimate goal is to attain the objectives of the companies under their stewardship, such as increasing sales growth. However, this situation does not imply that managers do not have personal interests. Stewardship theory in this regard suggests that the steward is aware of the convergence of interests between himself/herself and the principal. However, the steward believes that by working to achieve the company's objectives, his/her personal needs will be met. Therefore, the opportunistic behaviour of the steward is constrained "by the perception that the utility gained from pro-organisational behaviour is higher than the utility that can be gained through individualistic, self-serving behaviour" (Davis et al., 1997, p. 25).

Based on the above analysis, it is expected under stewardship theory that managers may use beneficial earnings management practices. In this regard, several authors incorporated the beneficial perspective in their earnings management definitions. For example, according to Beneish (2001),the beneficial perspective of earnings management implies that managers use their discretion in order to incorporate their expectations concerning the companies' future cash flow. In contrast, the opportunistic point of view of earnings management implies that managers utilise earnings management practices in order to mislead stakeholders. Similarly, Fields et al. (2001) and Watts and Zimmerman (1990) state that earnings management occurs when managers exercise their discretion in selecting the accounting treatment for certain economic transactions. This discretion might be opportunistic or firm value maximising. Additionally, the beneficial perspective of earnings management has been proved empirically by a number of scholars such as Siregar and Utama (2008), Subramanyam (1996) and Krishnan (2003), who found that discretionary accruals (proxy of earnings management) were positively associated with firms' future profitability. Jiraporn et al. (2008) further examined the beneficial perspective of earnings management practices by associating them with the firm value of the companies. The results of the study confirmed that earnings management was done for the purpose of improving communication between managers and stakeholders, because discretionary accrual was found to be positively associated with the firm value. However, Ronen and Yaari (2007, p. 27) extend the definition of earnings management, maintaining that earnings management practices incorporate three forms, as follows: "Beneficial: it signals long term value, Pernicious: it conceals short- or long-term value; Neutral: it reveals the short-term true performance".

As discussed above, several authors suggest that earnings management practices may incorporate beneficial, natural and opportunistic practices (e.g., Healy and Wahlen,1999;

Schipper, 1989; Akers et al.,2007; Ronen & Yaari, 2007). However, this study will adopt the view that earnings management practices represent an opportunistic practice. The study in this regard will follow Healy and Wahlen's (1999) definition of earnings management, which excludes the beneficial perspective on the practice. This is because there are number of factors that might induce the managers to use opportunistic earnings management practices. For example, Healy and Wahlen (1999) argue that, even though the managers might exercise their judgement in financial reporting to convey useful information to the stakeholders about the underlying performance of the companies, since managers are considered to have superior knowledge about firm-specific issues, this may not occur often because auditing cannot be perfectly relied upon to induce this beneficial practice and constrain the opportunistic one. Hence, managers are more likely to use their judgement to commit opportunistic earnings management practices which depart from the firm's actual performance. Furthermore, Healy and Wahlen (1999) argue that the objective of the managers in using earnings management practices is to "mislead stakeholders about the underlying economic performance of the company". Healy and Wahlen (1999) believe that this is likely to occur if managers realise that stakeholders will be unable to undo earnings management practices. In addition, managers can mislead stakeholders easily because they usually have access to information that is not available to stakeholders outside the companies (Healy and Wahlen, 1999) . This in turn will make recognising the effect of earnings management practices on reported income more difficult for those stakeholders. In the same vein, Ronen and Yaari (2007) indicated that earnings management is considered opportunistic behaviour when readers of the financial reports cannot analyse the effect of earnings management practices and extract the true information.

Ronen and Yaari (2007) point out that earnings management is not an opportunistic practice if the users of the financial statements are able to undo them. For instance, if the company during its bad time had decided to change the depreciation policy in order to increase the reported income temporarily until this time passed. If this reason is known to the stakeholders, they will be able to undo this change and calculate the true earnings. Apart from this case, generally, it is expected that readers of the financial statement will be unable to unravel the effect of earnings management practices on reported income because earnings management is an unobservable element in accrual (Beneish, 2001). Furthermore, prior studies provide anecdotal evidence which indicates that managers use earnings management to increase their bonuses (Healy et al., 1987; Bergstresser & Philippon, 2006).This is because the performance of companies has been linked with managers' wealth in order to align their interests with of the companies' owners. This argument is also supported theoretically by

agency theory, which implies that managers may act opportunistically in the fulfilment of their interests (Jensen & Meckling, 1976). Thus, for the above reasons, this study will consider earnings management practices as an opportunistic practice.

4.5.1.2.2 Accrual and earnings management

Accrual is one of the main principles of accounting. It measures the performance of the company by recognising the economic event that occurs in a certain accounting period regardless of its cash consequences[24] (Weetman, 2015). In other words, the financial transaction will be recorded in the accounting books whether its cash payment/receipt occurs or not (Weetman, 2015). One example of the use of accrual is revenue recognition, whereby a company based on accrual basis can record the revenues in its accounting books prior the collection of the cash from the customers (Ronen & Yaari, 2007). This is done through sales on account in which the company debts account receivables and credit sales revenues. Yet, throughout the lifetime of the company, reported revenues should be equal to total cash inflows, so that accrual will be reversed and become zero (Ronen & Yaari, 2007). Thus, in the above example, when the customer pays his debt, the account of receivables which represent the accrual should be reversed and become zero and the cash will be increased by the amount of the payment (Ronen & Yaari, 2007).

According to Weetman (2015), the accrual basis is superior to the cash basis as it provides a more accurate picture about the real performance of the company during the accounting period. This is because the company's income statement will incorporate all the revenues that actually earned and all the expenses that incurred to generate these revenues during a certain accounting period. Yet, several researchers such as Peasnell et al. (2005), Bao and Lewellyn (2017), Saleh et al. (2005) and Young (1999) argue that accrual is considered a tool favoured by managers in practising opportunistic earnings management because accrual has no associated cash flow effect and it is difficult to uncover. In addition, Peasnell et al. (2005) argue that manipulation of earnings through accrual is less costly than the manipulation of earnings by taking decisions that involve changing the operations and the investment activities of the firm. For example, as described by Roychowdhury (2006), a company may manage earnings by taking decisions that involve increasing the capacity of the production in order to decrease the cost of goods sold and increase the reported earnings. This is done by distributing the fixed overhead cost over a larger number of units. Ultimately,

[24] In contrast to the accrual principle, the cash basis recognises revenue only when the cash is received and recognises expenses only when the cash is paid (Minbiole, 1998).

the fixed costs per unit will decrease. This method will lead to a low cost of goods sold (COGS) and high gross profit. However, increase the production will cause the company to incur other related expenses such as holding costs for storing inventories that have not been sold. In turn, these associated costs will decrease the cash flow generated from the operating activities.

However, the manipulation of reported earnings is easier and less costly through accrual. For instance, if managers want to increase reported income through accrual they can achieve that by advancing the recognition of the revenue through booking credit sales, or reduce the reported expenses by estimating a low allowance for bad debts in a certain accounting period (Teoh et al., 1998). Thus, earnings management might be practised by utilising accrual in order to increase or decrease the reported net income (Al-thuneibat, 2016). Obviously, these practices will not result in any effect on the cash flow of the company, because they are conducted through accrual. Moreover, several empirical studies in the literature provide evidence showing that managers use discretionary accrual to practise earnings management (Linck et al., 2013; Shuto, 2007; Bergstresser & Philippon, 2006).Hence, as discussed above, changing the underlying operation of the company to manipulate reported earnings will be more costly to the company because these activities will lead to a real decrease in the company's future cash flow, which in turn will reduce the value of the company (Roychowdhury, 2006; Peasnell et al., 2005). Therefore, it is expected that managers will resort to accrual manipulation since it is the less costly method.

Despite the fact that managers might use accrual to manipulate reported earnings, accrual carries several advantages. For instance, Walker (2013) states that managers usually have better access to future cash flow information than investors. Thus, they can communicate this information through accrual practices. For example, the estimation value of the provisions of bad debts can give the investors an indication about the expected cash flow that will be collected from the receivables (customers). Similarly, Degeorge et al. (2013) indicate that accrual may be used to book depreciation expenses that show the ageing of the assets, or it might be used by managers to manipulate reported earnings.

Given the fact that accrual can be used simultaneously for manipulation purposes and for conveying accurate information about the performance of the companies, Healy (1985) states that total accrual is the sum of both discretionary accrual and nondiscretionary accrual. Therefore, prior studies attempt to distinguish between managed accrual and normal accrual (Jones, 1991; DeAngelo, 1986; Dechow et al., 1995; Healy, 1985). In this regard, Ronen and

Yaari (2007, p. 372) define non-discretionary accrual as “accruals that arise from transactions made in the current period that are normal for the firm given its performance level and business strategy, industry conventions, macroeconomic events, and other economic factors”; while “discretionary accruals are accruals that arise from transactions made or accounting treatments chosen in order to manage earnings”. Given this definition, discretionary accrual represents managerial discretion. Thus, it has been widely considered a proxy for earnings management practices by the majority of earnings management studies (Healy & Wahlen, 1999; Ronen & Yaari, 2007; Bekiris & Doukakis, 2011; Houqe et al., 2017; Bao & Lewellyn, 2017; Peasnell et al., 2005).

4.5.1.2.3 Measurement of earnings management

As discussed in the previous section (4.5.1.2.2), accrual was the starting point for measuring earnings management practices. Obviously, earnings management could be practised through other tools (e.g., real earnings management), yet previous studies (Peasnell et al., 2005; Bao and Lewellyn, 2017; Saleh et al., 2005; Young, 1999) have suggested that accrual may be considered a favoured tool for managers to use in practising earnings management. This is because accrual is difficult to detect, and it is a less costly method. Hence, a majority of the earnings management models in the literature attempt to distinguish between discretionary accrual (abnormal accrual) and non-discretionary accrual (normal accrual) (e.g., Jones, 1991; DeAngelo, 1986; Dechow et al., 1995; Healy, 1985). Normal accrual reflects an adjustment made on cashflow that is determined by the performance of the company, while abnormal accrual reflects accrual managed by managers through earnings management practices (Degeorge et al., 2013). It is important to note that the effectiveness of earnings management models depends on modelling the normal accrual component accurately, so that the remaining component of accrual accurately represents the discretionary accrual (Dechow et al., 2010; Peasnell et al., 2000; Young, 1999).

The sections below discuss some of the most used earnings management models in the literature, followed by a discussion of their limitations. Finally, the justifications of the model selected to be used in this study are discussed in section 4.5.1.2.4.

4.5.1.2.3.1 The Jones (1991) Model

Jones (1991) criticises previous earnings management research models, including DeAngelo's (1986) model, due to issues in treating accruals. This is because DeAngelo (1986) assumed that the difference between current total accrual and prior total accrual is due to the change in discretionary accrual only, since nondiscretionary accrual is assumed to remain constant. However, the assumption of the stability of non-discretionary accrual from period to period may not be accurate, since Kaplan (1985) found that the change in total accrual (which involves both discretionary and nondiscretionary accrual) depends on the economic circumstances of the companies. Jones (1991), in this regard, provided further explanation of Kaplan's findings. According to Jones (1991), if the change in nondiscretionary accrual is affected by the change in revenue (since Jones (1991) assumed that revenues are a function of nondiscretionary accrual), then any decrease/increase in total accrual may be attributed in this case to nondiscretionary accrual rather than to discretionary accrual only. This situation arises when managers accrue revenue at the end of the year when the cash revenue has not yet been received from the customers. This transaction will lead to an increase in total accrual as well as the nondiscretionary accrual because the journal entry of accrual revenue involves debiting account receivables and crediting sales revenue (Dechow et al., 1995). Thus, the increase in the account receivables (a component of current assets) will lead to an increase in total accrual since total accrual is measured as

$$[\Delta\ Current\ Asset - \Delta Cash] - [\Delta Current\ liabilities] - depreciation\ and\ amortisation\ expenses].$$

Jones (1991) argues that since revenues might have an effect on the level of nondiscretionary accrual, this relation should be taken into account in measuring nondiscretionary accrual. Hence, Jones (1991) developed a model that controls for the changes in firms' economic circumstances that may affect the level of nondiscretionary accrual, as follows:

$$\frac{TA_{it}}{A_{it-1}} = \alpha_i \left[\frac{1}{A_{it-1}}\right] + \beta_{1i}\left[\frac{\Delta REV_{it}}{A_{it-1}}\right] + \beta_{2i}\left[\frac{PPE_{it}}{A_{it-1}}\right] + \varepsilon_{it} \quad (2)$$

Where:

TA_{it} = total accruals in year t for firm i;

ΔREV_{it} = revenues in year t less revenues in year t -1 for firm i;

PPE_{it} = gross property, plant, and equipment in year t for firm i;

A_{it-1} = total assets in year -1 for firm i ;

ε_{it} = error term in year t for firm i (residual);

$i = 1 \ldots, N$ firm .

$t = 1 \ldots, T_i$ year index for the years included in the estimation period for

period firm i;

Total accruals (TA) measure as follows:

$$TA = [\Delta\ Current\ Asset - \Delta Cash] - [\Delta Current\ liabilities] - depreciation\ and\ amortisation\ expenses$$

Jones (1991) controlled for the change in nondiscretionary accrual by including gross property, plant and equipment (PPE) and the change in revenues (ΔREV) in her model. The intuition behind the inclusion of gross property, plant and equipment is that this element will control for the component of total accrual that was related to nondiscretionary depreciation expenses. Gross (PPE) is used in this model to control for nondiscretionary depreciation expenses instead of net (PPE) because the latter is subject to discretionary depreciation expenses (Kang, 1999). Hence, non-discretionary accrual should be influenced by nondiscretionary factors such as gross (PPE) (prior to the deduction of the depreciation expenses) and revenues. In addition, revenues are included in the model in order to control for the economic environment of the firm, since they are an objective measure of the operation of the company (Jones, 1991). In the same vein, Total Accrual includes changes in working capital accounts (e.g., inventory, account receivables and accounts payable) which may depend on changes in revenues. Yet, in order to correct for heteroscedasticity, all variables in the model are scaled by lagged assets in the year t-1.

As presented above, Equation 2 will be used in order to estimate the nondiscretionary accrual (normal accruals) level of total accrual. Afterwards, the residual term from this model will represent the discretionary accrual (DA) component. Given this factor, Jones's (1991) model differs from previous studies such as that of DeAngelo (1986), which considers the change in total accrual as discretionary accruals.

In order to measure earnings management practices, Jones (1991) divides total accrual into nondiscretionary (normal, unmanaged accrual) and discretionary accrual (abnormal, managed accrual). This is accomplished through an event study approach, in which it is assumed that companies do not manage earnings before the event. Therefore, the time series of the company's earnings will be divided into two stages: estimation period and event period. In the estimation period, it is assumed that Discretionary Accrual (DA) = 0. Hence T in the model represents the estimation period which is used to estimate the level of non-discretionary accrual for each company. Jones (1991) used the longest available time series data for each company to be included in the estimation period.

Hence, in the estimation period, the Jones (1991) model will be applied in order to estimate nondiscretionary accrual, in which total accrual (TA) will be regressed against the change in revenue (ΔREV) and gross level of property, plant and equipment (PPE), using time-series data for each sample firm prior to the event year. Then, the regression will produce estimates of the coefficients $\alpha_{i}, \beta_{1i,and}\, \beta_{2i}$ using the ordinary least squares (OLS). These estimated parameters will be combined with the data of TA, ΔREV and PPE from the event year in order to determine the discretionary portion of total accrual (a proxy of earnings management). Then, the residual term of this model (the equation prediction error) will represent discretionary accrual.

Jones' (1991) model has helped to some extent in addressing some of the limitations of previous earnings management models, through being the first study to introduce the regression approach to control for nondiscretionary factors that affect the level of accrual (McNichols, 2000; Lee & Vetter, 2015). Yet, Jones's model has been subjected to considerable criticism. Saleh et al. (2005), McNichols (2000), K. V. Peasnell et al. (2000) and Bartov et al. (2000) criticised the time series approach that used by Jones (1991), which implies the selection of firms that have at least 10 time series of data points for the estimation. This, in turn, will lead to the selection of only firms that have a long history of data (usually larger firms) and eliminate small, recently established firms which may also engage in earnings management practices. As a consequence, this will reduce the sample size of the study and lower its representativeness (McNichols 2000). In addition, Ronen and Yaari (2007) state that using a small sample size in measuring earnings management may increase the possibility of type II error where earnings management exists but researchers incorrectly accept the null hypothesis of no earnings management takes place. In the same vein, several scholars such as Ronen and Yaari (2007) and McNichols (2000) have

questioned the validity of Jones's (1991) assumption regarding the absence of earnings management practices during the estimation period. For example, McNichols (2000) argues that it is not reasonable to suppose that firms during the estimation period were not motivated to manage earnings, particularly where there is a large stream of literature providing evidence that firms do manage earnings. Hence, if the estimation period included managed earnings, that would lower the power of the test. Thus, McNichols (2000) suggests that studies should depart from these approaches (event study and time series) and use instead a cross-sectional estimation approach, which does not demand time-series data for each company. However, the benchmark for each company's accruals will be the behaviour of the other companies' accrual in the sample. Another main limitation of Jones'(1991) model is, as explained by Dechow et al. (1995), that the model considered all the revenues as a part of nondiscretionary accrual . Hence, if managers managed earnings through discretionary revenue, the model, in this case, would exclude a portion of managed earnings from the discretionary accrual. In order to mitigate this problem, Dechow et al. (1995) introduced a modification of Jones's (1991) model that will be discussed in detail below.

4.5.1.2.3.2 The Modified Jones Model, proposed by Dechow et al. (1995)

Dechow et al. (1995) address the limitations of Jones's (1991) model in which she considered all revenues to be nondiscretionary in both the estimation and event periods. However, this assumption may lead to measurement errors in discretionary accrual if managers exercised their discretion over revenue through credit sales in the event period. Therefore, Dechow et al. (1995) modified Jones's (1991) model by subtracting the changes in the account receivables from the change in revenues in the event period. Given this modification, the modified model builds on the assumption that all changes in credit sales during the event period are due to earnings management practices. This is suggested because, as Dechow et al. (1995) argue that , managers may find it easier to manage earnings by exercising their discretion in the recognition of revenues through credit sales than through cash sales.

Hence, under the modified Jones model, the estimation of nondiscretionary accrual in the estimation period is smiler to Jones's (1991) (Equation 2), where total accrual is regressed on the change in revenues (ΔREV) and gross property plant and equipment (PPE), since this model assumes that no manipulation in the credit sales occurs during the estimation period.

Afterwards, the estimated coefficients from the first stage (α_i $\beta_{1i}\beta_{2i}$) will be used to estimate the non-discretionary accrual in the event period. The model here adjusts the change in revenues by the changes in receivables in the event period, as follows:

$$NDA = \alpha_1 \left[\frac{1}{A_{t-1}}\right] + \alpha_2 \left[\frac{\Delta REV_{it} - \Delta REC_{it}}{A_{it-1}}\right] + \alpha_3 \left[\frac{PPE_{it}}{A_{it-1}}\right] + \varepsilon_{it} \quad (3)$$

Where:

ΔREV_{it}= revenues in year t less revenues in year t -1 for firm i,

ΔREC_{it} = net receivables in the year t less net receivables in year t-1 for firm i ,

PPE_{it} = gross property, plant, and equipment in year t for firm i;

A_{it-1} = total assets in year -1 for firm i ;

ε_{it} = error term in year t for firm i (residual)

In their comparison study, Dechow et al. (1995) found that his model outperformed the Healy (1985), DeAngelo (1986), and Jones (1991) models in detecting sales-based manipulations. However, although Dechow et al. (1995) model addresses the limitations of Jones's (1991) model and reduces its vulnerability to type II error in which the estimation of earnings management should not be equal to zero when earnings management occurs by managing the revenues in the sample of the study, the modified Jones (1991) model still suffers from a number of limitations. First, it suffers from type I error in which this model may incorrectly classify accruals as discretionary accrual while in fact, the accrual represents the fundamental performance of the company (nondiscretionary accrual) (Dechow et al., 2010). This error may occur because this model assumes that all credit sales in the event period are meant to be manipulated. Second, in relation to this criticism, McNichols (2000) and Kothari et al. (2005) argue that the modified Jones model may overestimate the discretionary accrual practically in the case of firms that experience growth in revenues in the event period compared to the estimation period[25]. This is because it is acceptable that not all the changes in account receivables/credit sales are discretionary in the event period. Indeed, part of this change may be attributed to normal accrual, given the fundamental performance of the company (McNichols, 2000). Third, Dechow et al. (1995) tested the susceptibility of the Jones (1991) model and the modified Jones model to type I error on a

[25] Kothari et al. (2005) found that companies experiencing revenues growth showed large accruals as a result of increases in account receivables and inventories.

sample of 1000 firms that experience extreme financial performance. Companies included in the sample have either extreme cash flow from operations activities or extreme earnings performance. The researcher assumed that earnings management is unlikely to take place in this sample. Thus, if the Jones (1991) model and the modified Jones model are efficient, the results of their tests will not reject the null hypothesis of no earnings management. Dechow et al. (1995) found that both models produce a significant probability of type I error (poorly specified) when applied to companies that have extreme cash flows, in which these models classify accruals incorrectly as discretionary accrual while in fact, the accrual represented a fundamental performance of the company. In the same vein, Kothari et al. (2005) replicated Dechow et al.'s (1995) specification test for Jones (1991) and the modified Jones model. The results showed that both models have a high rate of type I error, particularly in the sample of extreme financial performance. For example, under the assumption of no earnings management in the sample of firms that have low operating cash flow, the rejection rate for Jones (1991) and modified Jones model is 34.4% and 40.8% respectively. Thus, these results confirmed that both models explicitly reject the null hypothesis of no earnings management when firms experience extreme financial performance. Therefore, in order to address this issue, Kothari et al. (2005) introduced modifications to the modified Jones model which will be discussed below.

4.5.1.2.3.3Kothari et al.(2005)model

Kothari et al. (2005) introduced a solution to the concern over the correlation between the residual of the modified Jones model (discretionary accrual) and performance. They suggested two approaches to overcome this problem. First: the performance-matched discretionary accrual approach. Second: using the linear regression-based approach in which the performance is controlled through the introducing of return on assets (ROA) to the modified Jones model as an additional regressor.

According to Kothari et al. (2005), the matching approach was undertaken based on the company's return on assets (ROA) and industry membership. Hence, the model will first match each firm-year observation with another sample firm from the same industry and with the closest return on assets. Afterwards, the modified Jones model will be applied to both the sample companies (treatment companies) and the matched companies (control companies). Then, the matched companies' discretionary accrual will be deducted from the sample companies' discretionary accrual in order to obtain performance matched discretionary accrual.

As an alternative to the performance matched discretionary accrual, Kothari et al. (2005) control for performance by assuming a linear relationship between total accrual and performance. Therefore, Kothari et al. (2005) introduced ROA as additional variables to the modified Jones model as follows:

$$TA_{it} = \alpha_0 + \beta_1 \left[\frac{1}{A_{it-1}}\right] + \beta_2 \left[\frac{\Delta REV_{it} - \Delta REC_{it}}{A_{it-1}}\right] + \beta_3 \left[\frac{PPE_{it}}{A_{it-1}}\right] + \beta_4 ROA_{it-1} + \varepsilon_{it} \quad (4)$$

Where ROA_{it-1} is the lagged return on assets calculated as prior year net income divided by prior year total assets, and α_0 represents a constant. Kothari et al. (2005) added a constant term in the above model. They stated that the inclusion of the constant will provide further control for the heteroscedasticity issue that is not mitigated by using the assets as a deflator.

Kothari et al. (2005) further modified the modified Jones model by estimating it cross-sectionally (by year and by industry) instead of using the time-series approach which was used by Dechow et al. (1995). Kothari et al. (2005) criticised the time-series setting in which it was assumed that sales are not manipulated in the estimation period but the change in the account receivables in the event period is associated with earnings management practices. Kothari et al. (2005) argue that this approach may produce large estimated discretionary accrual if the firms experienced high sales growth in the event period compared to the estimation period. Thus, in order to mitigate this problem, Kothari et al. (2005) relaxed the assumption of the estimation and the event period and estimate the model cross-sectionally whereby they assume that all the changes in the account receivables are due to earnings management practices in every period.

Furthermore, Kothari et al. (2005) conducted several simulation tests to examine the specification (i.e., the probability of a type I error) and power (i.e., the probability of a type II error) of the performance-matched approach based on the Jones model and the modified Jones model, the linear regression approach in which ROA is added to the Jones model and the modified Jones model as well as the standard Jones model and the modified Jones model. The results of the specifications test under the null hypothesis of zero discretionary accruals show that standard Jones model and the modified Jones model have the highest type I error rates compared to other models when they are applied to a sample of firms that experience extreme performance. For example, in the sample of firms with a low earnings-to-price (EP) ratio, the rejection rate for the Jones model and the modified Jones model is 68.0% and

74.8%, respectively. This result indicates that the Jones model and the modified Jones model suffer from misspecification issues in which these models may incorrectly classify accruals as discretionary accrual, while in fact, the accrual represents the fundamental performance of the company (nondiscretionary accrual). In contrast, the performance-matched based on Jones model with the current ROA has the lowest rejection rate for the null hypothesis of zero discretionary accruals. The model has a 5% rejection rate when applied to the sample of firms with a high earnings-to-price (EP) ratio, high/low book-to-market ratio, and high operating cash flow. In addition, the study reported that the inclusion of ROA in the Jones model and modified Jones model made a small improvement in the specification of the model. Therefore, Kothari et al. (2005) argue that their results suggested that their performance matched discretionary accrual and the linear regression approach in which ROA is added to the Jones model and the modified Jones model may help in mitigating type I error when performance is correlated with estimated discretionary accrual.

Regarding the test's power, the results also indicated that performance matched discretionary accrual using current ROA_t that based on the Jones model / modified Jones model outperformed both their regression-based approach (with ROA) and standard Jones model and the modified Jones model. Based on the above results, Kothari et al. (2005) concluded that the performance matched approach is the most powerful and specified model in detecting earnings management practices.

However, despite the above results which indicated the superiority of Kothari et al.'s (2005) approaches over the Jones and modified Jones models, Kothari et al. (2005) acknowledged several limitations of each of their approaches. First, the regression approach assumes a linearity in the relationship between nondiscretionary accrual and past performance (measured as ROA_{it-1}). Yet, Kothari et al. (2005) argue that there are two problems associated with this imposed assumption.(i), there is a lack of theory in the literature that support the assumption of the liner relationship between nondiscretionary accrual and past performance. Second, Kothari et al. (2005) empirically found a nonlinear relationship between performance and nondiscretionary accrual. In this regard, Lee and Vetter (2015) state that the potential for non-linearity between nondiscretionary accrual and ROA may add an artificial relationship to the model.

In addition to these limitations, Keung and Shih (2014) criticised the intensive use of the performance matched approach since its introduction. This is because the performance matched approach was proposed formerly as a solution to the sample skewness due to

extreme financial performance (the sample skewed due to elevated or depressed mean of ROA). However, prior studies (e.g., Dou et al., 2016 ; Fang et al., 2016 ; Bratten et al., 2016) that used this approach did not clarify whether their samples were skewed due to high or low ROA; also, they did not even discuss the issue of sample skewness. Keung and Shih (2014) state that if the sample is found to be skewed by earnings management, not by financial performance, there is no need to use performance matching approach to correct for this skewness. Earnings management practices might lead to an increase or decrease in profit, which in turn will affect the mean of ROA in the sample of companies. In this case the sample will be skewed not merely by extreme financial performance, but rather by earnings management practices which lead to extreme financial performance. However, if one can remove the effect of earnings management practices, the sample will not be skewed (Keung & Shih, 2014). In this regard, Keung and Shih (2014) argue that the probability of type II error will be increased when the performance matched approach is applied to the sample skewed by earnings management practices instead of good or poor performance. Since the performance-matched approach may remove earnings management practices that caused low or high financial performance. Therefore, this approach will be effective only if it is applied to the sample that is skewed entirely by extreme financial performance. However, knowing the true reason for the sample's skewness may be difficult for researchers, Hence, studies should not rely entirely on the performance matched approach as a standard model for detecting earnings management practices in their studies.

Keung and Shih (2014) tested the power of the performance-matched approach (vulnerability to type II error). The findings showed that in the sample of firms that skewed by earnings management practices, the number of detected cases of earnings management practices was reduced by 30%-50%. Thus, the above empirical findings confirm the limitation of the performance- matched approach in detecting some of the earnings management practices. In addition to this limitation, Dechow et al. (2010) argue that the performance matched approach may add a notice to the discretionary accrual measurement since it only explains 10-12% of the variation in accruals. Thus, it should only be applied when correlated performance is considered a serious issue in the study.

Finally, Kothari et al. (2005) acknowledged that one of the limitations of their approach is that they used a balance sheet approach in calculating total accrual and ignored its associated measurement error. Total accrual that measured through the balance sheet calculated as the change in non-cash current assets minus the change in current liabilities, excluding the current portion of long-term debt, minus depreciation and amortisation expenses. Thus, any

increase or decrease in the balances of non-cash current asset and current liability accounts will be reflected in the total accrual (Hribar & Collins, 2002). However, Hribar and Collins (2002) state that there are non-articulation events such as mergers and acquisitions, divestitures, and foreign currency translations, which may affect the change in current assets and current liability and consequently affect total accrual. For example, in the mergers and acquisitions situation, a positive bias will be introduced in estimating total accrual because net current assets (i.e., current assets minus current liabilities) will be increased when the company acquires another company (e.g., the inventory and account receivables will be increased in order to reflect the balances of the merged entity). In contrast, divestitures will lead to a decrease in the net current assets as the company divests operations, Thus, a negative bias will be added in estimating total accrual. However, these non-operating events (mergers and acquisitions, divestitures) have an impact on current assets and current liability as presented above, without having any impact on company earnings. In other words, the changes in current assets and liabilities that induced by the change in non-operating events will be presented in the balance sheet but will not be flow through the income statement. As a consequence, under the balance sheet approach, the change in balance sheet working capital accounts (e.g., inventory, account receivables, account payables) that relates to non-operating events will be incorrectly shown as an accrual. Hence, using the balance sheet approach, will introduce bias in the estimation of total accrual as discussed above.

Empirically, Hribar and Collins (2002) compared the efficiency of the balance sheet approach and the cash flow approach in calculating total accrual. The results indicated that the cash flow approach is more efficient than the balance sheet approach, particularly when companies experience mergers and acquisitions events. They found that the balance sheet approach yielded higher measurement error than the cash flow approach during mergers and acquisitions events. Given this, they concluded that studies that used the balance sheet approach in earnings management models are likely to be exposed to measurement error in accrual estimates. Thus, Kothari et al. (2005) suggested an extension of their model that consisted of using the cash flow approach in calculating total accrual, instead of the balance sheet approach. However, total accrual is calculated as the difference between earnings before extraordinary items and operating cash flow.

4.5.1.2.4 Justifications of the selected model in the study

As discussed in the previous sections (4.5.1.2.3.1,4.5.1.2.3.2 and 4.5.1.2.3.3), each earnings management model has its own strengths and weaknesses. There is no well-established model in the literature that can be used without limitations. Additionally, there is an absence of theory in earnings management literature that can guide the researchers towards the selection of a certain model (Elghuweel et al., 2016; McNichols, 2000). Therefore, this study uses the modified Jones model proposed by Dechow et al. (1995), after introducing some modifications following suggestions from prior literature (Kothari et al., 2005; Peasnell et al., 2000; McNichols, 2000)

The study selected the cross-sectional modified Jones model due to its popularity, where it is currently the widely used model in the literature (e.g. in Elghuweel et al., 2016; Ugrin et al., 2017; Chi et al., 2015; Black et al., 2017; Cheng et al., 2015; Houqe et al., 2017). Furthermore, the modified Jones model is selected because it is a type of aggregate accrual measure of earnings management. Unlike specific accrual models which are designed to capture the discretionary component of a certain type of accrual, such as provision of bad debt accrual (McNichols & Wilson, 1988) or the allowance for loan losses accrual (Beaver & Engel, 1996), aggregate accrual involves a collocation of several types of discretionary accruals. Therefore, the aggregate accrual is more comprehensive in the sense that it is more likely to capture all the discretionary components of the companies' total accrual (McNichols & Wilson, 1988). According to Walker (2013), it has been recognised in the literature that managers engage in earnings management practices by exercising their discretion over several accounts or using several accounting methods simultaneously. Therefore, it might be less likely that managers are relying on single accrual of certain accounts (e.g., provision of bad debt) when engaging in earnings management practices (Walker, 2013). Hence, researchers currently focus on the aggregate accrual measures of earnings management that capture all the managerial discretions in a single number, which is the value of the discretionary accrual (Walker, 2013). In contrast, earnings management models that are designed to capture the manipulation in a single accrual capture only a small part of the total discretionary accrual, and cannot reflect the discretionary accrual component that results from the manipulation of other types of accruals except, for example, the discretionary accrual related to provision of bad debt (McNichols & Wilson, 1988). Apart from this disadvantage, McNichols (2000) discusses the other disadvantages of the specific accrual models.For example, these models might not be reliable in detecting the manipulation of certain accruals, since it is very difficult to identify which type of accrual

was used for earnings manipulation. McNichols (2000) adds that using specific accrual models requires more institutional knowledge and data than the aggregate accrual approach, which, in turn, might impose more cost in applying the specific accrual models. Therefore, given the above discussion of the disadvantages of specific accrual models, this study uses the modified Jones model because it is a type of aggregate accrual measure of earnings management that is expected to provide a more comprehensive picture of the effect of managerial discretion on the accrual (McNichols & Wilson, 1988; Walker, 2013; McNichols, 2000).

Additionally, the study follows the suggestions of prior studies (Kothari et al., 2005; Peasnell et al., 2000; McNichols, 2000; Hribar & Collins, 2002; Bartov et al., 2000) in amending the modified Jones model by (i) estimating it cross-sectionally, (ii) introducing the constant, and (iii) using the cash flow method in calculating total accrual instead of the balance sheet approach. These amendments are discussed in detail below.

First, the study uses the modified Jones model as in Equation 3 but adds a constant term to the model. Adding the constant term improves the effectiveness of the model's estimation of earnings management, since, as stated by Kothari et al. (2005), the inclusion of the constant provides a further control for the heteroscedasticity issue, which is not mitigated by using assets as a deflator. Moreover, Kothari et al. (2005) provide empirical evidence indicating that the estimation of Jones (1991) and modified Jones without a constant led to an increase in the misspecification of both models. Currently, the majority of studies in the literature estimate the modified Jones model with a constant (e.g. Elghuweel et al., 2016; Ugrin et al., 2017; Chi et al., 2015; Black et al., 2017; Cheng et al., 2015; Houqe et al., 2017).

Second**,** unlike Dechow et al. (1995), the study estimates the modified Jones model cross-sectionally instead of using the time-series approach. This is because several studies have provided evidence showing that the cross-sectionally modified Jones model is superior to its time-series counterpart. For example, Bartov et al. (2000) examine empirically the ability of the cross-sectional and time-series approaches of the Jones (1991) and modified Jones models to detect earnings management practices in a sample of firms that received qualified audit opinion. The study depends on the relationship between discretionary accrual and audit qualifications to evaluate the ability of each model to detect earnings management practices. The study examined the ability of cross-sectional and time-series approaches of the Jones (1991) and modified Jones models for a sample of 173 companies that received qualified audit opinions and matched pairs of control companies which received unqualified audit

opinions. The study assumed that companies with qualified audit opinions had a high level of discretionary accrual. By using a univariate logistic-regression, the study indicated that discretionary accrual as estimated by a cross-sectional Jones (1991) and the modified Jones model was significantly associated with the likelihood of the companies to receive a qualified audit opinion. In contrast, there was no significant association between the discretionary accrual estimated by time-series approaches of the Jones (1991) and the modified Jones model and companies that received qualified audit opinions. Therefore, the results indicate the capability of the cross-sectional Jones (1991) and modified Jones model in detecting earnings management practices. Likewise, Subramanyam (1996) empirically found that the cross-sectional Jones (1991) and modified Jones model parameters estimates are better specified than their time-series counterparts, and that the average standard errors of the coefficients of cross-sectional Jones (1991) and the modified Jones models were lower than those in their time-series counterparts. In the same vein, K. Peasnell et al. (2000) examined the specification (i.e., the probability of a type I error) and power (i.e., the probability of a type II error) of the cross-sectional Jones (1991) and modified Jones model in order to evaluate their performance in detecting earnings management practices. The study adjusted the Jones (1991) and modified Jones model by using working capital accrual instead of total operating accrual in estimating earnings management practices. However, to test the power of the models in detecting earnings management practices, the study ran a simulation test that involved three types of earnings management practices, namely revenue manipulation, expenses manipulation and bad debt manipulation. The study expected both the cross-sectional Jones (1991) and modified Jones model to be powerful in detecting artificial earnings management when they rejected the null hypothesis of no income-increasing earnings management at a rate significantly exceeding the specified test level. The study found that both the Jones (1991) and modified Jones model were significantly powerful in detecting all three types of earnings management practices, and particularly in detecting bad debt and revenue manipulation. In addition, both models were found to produce a powerful test for detecting plausible levels of managed accrual. For example, in the artificially induced earnings management practices that equalled 6% of the lagged total assets, both the Jones (1991) and modified Jones models generated high rejection rates (100%) for the null hypothesis of no income-increasing earnings management. The rejection rate remained stable for lower artificially induced earnings management, equal to 5% and 1% of the lagged total assets. These results indicate that the Jones (1991) and modified Jones models are powerful in detecting earnings management practices even when the magnitude of manipulation is low.

However, K. Peasnell et al. (2000) note that their results contrasted with those of Dechow et al. (1995), who examined the power of the time-series Jones (1991) and modified Jones models. This is because Dechow et al. (1995) found that in the setting of artificially induced earnings management practices equal to 5% of total assets, both the time-series Jones (1991) and the modified Jones models produced lower rejection frequencies (less than 30%) for the null hypothesis of no income-increasing earnings management. However, when the artificially induced earnings management exceeded 50% of total assets, both models generated rejection frequencies at a rate reaching 100%. By comparing the results of K. Peasnell et al.'s (2000) study and Dechow et al.'s (1995) study, it is found that the cross-sectional version of the Jones (1991) and modified Jones models is more powerful than the time-series version, since the former is found to be effective in detecting subtle practices of earnings management. However, the time-series approach of the Jones (1991) and modified Jones models appears to be effective only when the magnitude of manipulation is very high; it is not as effective in detecting a low magnitude of accrual manipulation as the cross-sectional Jones (1991) and modified Jones models.

K. Peasnell et al. (2000) note the difference in rejection rates between their study and Dechow et al.'s (1995) study, in that K. Peasnell et al.'s (2000) study documented a higher rejection rate of the null hypothesis of no income-increasing earnings management than Dechow et al. (1995), while the sample of both studies contained artificially induced earnings management practices. K. Peasnell et al. (2000) argue that the difference in rejection rates between the two studies might be attributed to the method used in calculating total accrual, which is considered a fundamental component in measuring discretionary accrual. K. Peasnell et al.'s (2000) study used working capital accrual, which a number of studies (e.g., Peasnell et al., 2005; Atieh & Hussain, 2012; Beneish, 1998) considered more powerful than total operating accrual, since it might involve more accrual manipulation than total operating accrual due to the greater likelihood of earnings being managed through working capital accounts.

In terms of examining the model specification in K. Peasnell et al.'s (2000) study, both the cross-sectional Jones (1991) and modified Jones model are examined based on the extent to which each model incorrectly rejects the null hypothesis that states that no earnings management exists. The study examined the specification of the models using a random sample, which was not expected to have any systematic earnings management practices. Given this, the study anticipated that a well-specified model would not reject the null hypothesis of no earnings management at a rate exceeding the specified test level of 5% or

1%. The results indicated that neither of the models rejected the null hypothesis, and their rejection frequencies were equal to the specified test level. These findings, in turn, indicate that both the Jones (1991) and modified Jones model are well specified and have little vulnerability to type 1 error.

Jaime & Noguer (2004) replicated the study of K. Peasnell et al. (2000), by examining the specification and the power of cross-sectional working capital accrual of the Jones (1991) and modified Jones model in the Spanish context. The findings of the study confirmed the results of K. Peasnell et al. (2000), in which both models were found to be well specified when they were applied to a random sample of companies that were expected to have no earnings management practices. The study also supports K. Peasnell et al.'s (2000) study in finding that both the Jones (1991) and modified Jones model were powerful in detecting revenue and bad debt manipulation. Furthermore, the study confirmed the findings of Dechow et al.'s (1995) study as finding that the modified Jones model was more powerful than Jones's (1991) model in detecting revenue-based manipulation. In addition, Jones et al. (2008) provided evidence of the ability of the cross-sectional Jones (1991) model, modified Jones model, and Kothari et al. (2005) models (performance-matched and regression approach) to detect extreme cases of earnings management practices. The study used a sample of 188 companies that had been charged by the Securities and Exchange Commission (SEC) because they were found to be overstating their reported earnings. The study found that all the models were significantly associated with the existence of fraudulent practices, which implies that they have the ability to detect fraudulent earnings practices.

As presented above, several studies (e.g. Jones et al., 2008; K. Peasnell et al., 2000; Bartov et al., 2000) have provided evidence confirming the effectiveness of the cross-sectional modified Jones model and its superiority to the time-series approach. Accordingly, this study measures the level of earnings management practices by using the cross-sectional modified Jones model. In addition to the empirical evidence that supports the use of the cross-sectional approach of the modified Jones model and confirms its superiority to its time-series counterpart, this study does not use the time-series approach for the following reasons:

(i) According to Ronen and Yaari (2007), Yates (2016) and K. V. Peasnell et al. (2000), the time-series approach has an inherent survivor bias problem. This is because the time-series approach assumes that the coefficients of the modified Jones model ($\Delta REV_{it}\Delta REC_{it}, PPE$) which are used to estimate the normal accrual are time-invariant (Ronen & Yaari, 2007; Yates, 2016). This assumption may introduce survivor bias since it is not plausible that

companies do not change the policies of their business or their accrual policies (Ronen & Yaari, 2007) over a long period (the time-series approach requiring a long series of observations of up to 10 years of data for a sample firm). Consequently, these changes affect the non-discretionary accrual; however, the effect of the change of the business policies or accrual policies on non-discretionary accrual is not captured by the time-series approach, since the coefficients used to estimate the non-discretionary accrual are assumed to remain constant over time (Ronen & Yaari, 2007). Therefore, to overcome these limitations of the time-series approach, the cross-sectional approach is recommended to use in the estimation of the modified Jones model (K. V. Peasnell et al., 2000; McNichols, 2000; Kothari et al., 2005). Unlike the time-series approach, the cross-sectional approach does not impose the assumption of the stability of the parameters estimates of the modified Jones model over time (K. V. Peasnell et al., 2000). The cross-sectional analysis estimates the modified Jones model by year and includes the industry-specific effect, which enables the estimated parameters of the modified Jones model to vary across different years and industries (Yates, 2016). This, in turn, might lead to solving the problem of survivorship bias inherent in the time-series approach (K. V. Peasnell et al., 2000).

(ii) The time-series approach of the modified Jones model required long series of observation for certain firms, which may yield 10 years of data (K. V. Peasnell et al., 2000; McNichols, 2000; Ronen & Yaari, 2007). This, in turn, leads to the selection of only firms that have a long history of data (usually larger firms), and the elimination of small, recently established firms. As a consequence, this reduces the sample size of the study and lowers its representativeness (McNichols, 2000). In addition, Ronen and Yaari (2007) state that using a small sample size in measuring earnings management may increase the possibility of a type II error, where earnings management exists but researchers incorrectly accept the null hypothesis of no earnings management practices. However, the cross-sectional analysis helps in increasing the sample size since it does not require a long series of observations.

(iii) The time-series approach for the modified Jones model was criticised by Kothari et al. (2005), Yates (2016), Ronen and Yaari (2007) and McNichols (2000) because it assumed that sales are not manipulated in the estimation period, but the change in the account receivables in the event period is associated with earnings management practices. Kothari et al. (2005) argue that this approach may produce large estimated discretionary accrual if the firms experienced high sales growth in the event period compared to the estimation period. Therefore, in order to mitigate this problem, Kothari et al. (2005) relaxed the assumption of the estimation and the event periods and estimated the modified Jones model cross-

sectionally; they assumed that all the changes in the account receivables were due to earnings management practices in every period. Hence, estimating the modified Jones model cross-sectionally corrects the assumption that no earnings management exists in the estimation period, as assumed by Jones (1991) and Dechow et al. (1995).

Third, the study further amends the estimation of the modified Jones model by changing the calculation method of total accrual. Dechow et al. (1995) calculated total accrual through the balance sheet method, in which total accrual was measured as change in non-cash current assets minus the change in current liabilities, excluding the current portion of long-term debt, minus depreciation and amortisation expenses. However, this approach has a limitation, as it may introduce measurement error in the estimation of earnings management. According to Hribar and Collins (2002, p. 106), "The balance sheet approach relies on the presumed articulation between changes in balance sheet working capital accounts and the accrual component of revenues and expenses on the income statement". Therefore, any increase or decrease in the balances of non-cash current asset and current liability accounts is reflected in total accrual. However, Hribar and Collins (2002) state that there are non-articulation events such as mergers and acquisitions, divestitures, and foreign currency translations that may also affect the changes in current assets and current liability accounts and consequently affect total accrual. For example, in the mergers and acquisitions situation, a positive bias is introduced in the estimation of total accrual because the net current assets (i.e., current assets minus current liabilities) are increased when the company acquires another company (e.g., the inventory and account receivables are increased in order to reflect the balances of the merged entity). In contrast, divestitures lead to a decrease in the net current assets as the company divests operations. Therefore, a negative bias is added in estimation of the total accrual. However, these non-operating events (mergers and acquisitions, divestitures) have an impact on current assets and current liability accounts as presented above, without having any impact on company earnings. In other words, the change in current assets and liabilities induced by the change in non-operating events is presented in the balance sheet but does not flow through the income statement. As a consequence, under the balance sheet approach, the changes in balance sheet working capital accounts (e.g., inventory, account receivables, account payables) that are related to non-operating events are incorrectly presented as accruals. Consequently, this introduces bias in the estimation of the total accrual. In addition, Hribar and Collins (2002) empirically compared the efficiency of the balance sheet approach and the cash flow approach in calculating total accrual. The results indicated that the cash flow approach was more efficient than the balance sheet approach, particularly when companies experienced mergers and acquisitions events. It was found that the balance sheet

approach yielded a higher measurement error than the cash flow approach during mergers and acquisitions events. Given this, they concluded that studies that used the balance sheet approach in earnings management models were more likely to be exposed to measurement error in accrual estimates.

Based on the above discussion, this study calculates the total accrual through the cash flow approach as measured by the difference between earnings before extraordinary items and operating cash flow. This approach is widely used in the literature (Cheng et al., 2015; Alshetwi, 2016; Fang et al., 2016; Habbash & Alghamdi, 2016).

Hence, the model used in the study is the modified Jones model, as follows:

$$\frac{TA_{it}}{A_{it-1}} = \alpha_0 + \alpha_1 \left[\frac{1}{A_{t-1}}\right] + \alpha_2 \left[\frac{\Delta REV_{it} - \Delta REC_{it}}{A_{it-1}}\right] + \alpha_3 \left[\frac{PPE_{it}}{A_{it-1}}\right] + \varepsilon_{it} \quad (5)$$

Where:

TA_{it} = is total accrual, calculated as the difference between net income before extraordinary items and cash flow from operations activities.

α_0 = constant term.

ΔREV_{it}= revenues in year t less revenues in year t -1 for firm i;

ΔREC_{it} = net receivables in the year t less net receivables in year t-1 for firm i;

PPE_{it} = gross property, plant, and equipment in year t for firm i;

A_{it-1} = total assets in year -1 for firm i;

ε_{it} = error term in year t for firm i (residual)

4.5.1.2.5 Robustness Test

Since earnings management models may involve a number of limitations, it is important to check whether the results of the study are robust to the alternative measures of discretionary accrual. Therefore, this study conducts two robustness tests to serve this purpose.

First, as discussed in section 4.5.1.2.3.2 and section 4.5.1.2.3.3, several studies, such as Dechow et al. (1995) and Kothari et al. (2005), found that the modified Jones model was not well specified when it was applied to companies that experienced extreme performance, in which case it was found that the model yielded a significant proportion of type I error. Therefore, Kothari et al. (2005) attempted to mitigate this problem by controlling for performance through introducing return on assets (ROA) to the modified Jones model as an additional regressor.

Therefore, this study uses Kothari et al.'s (2005) model in order to ensure that the magnitude of discretionary accrual estimated by the modified Jones model in the main test is not affected by the extreme performance of the companies. Similar to the current study, there are several studies in the literature that used Kothari et al.'s (2005) model to examine the robustness of their results (e.g., Elghuweel et al., 2016; Chen et al., 2008; Black et al., 2017; F. Bekiris & Doukakis, 2011).

However, following the suggestion of Kothari et al. (2005) and Hribar and Collins (2002), the total accrual of Kothari et al.'s (2005) model is estimated based on the cash flow approach rather than the balance sheet approach. This is because Hribar and Collins (2002) found that using the balance sheet approach in estimating the discretionary accrual might introduce a systematic bias in the estimated discretionary accrual[26]. Kothari et al.'s (2005) model is estimated as in Equation 4.

Second, the current study repeats the estimation of the modified Jones model by using the working capital accrual instead of the total operating accrual. Working capital accrual is defined as a change in non-cash current assets minus the change in current liabilities, excluding the current portion of long-term debt. The difference between working capital accrual and total operating accrual is that working capital accrual excludes the long-term component of total accrual, which is the depreciation (Bekiris & Doukakis, 2011; Peasnell et al., 2005). Several authors in the literature (e.g., Atieh and Hussain, 2012; Beneish, 1998; Young, 1999) argue that working capital accrual is superior to total accrual in estimating discretionary accrual for two reasons. (i) Managers are expected to use working capital accrual to manipulate the reported earnings more than total operating accrual. This is because managers are less likely to engage in earnings management practices via total operating accrual such as depreciation (which is a component of total operating accrual) because

[26] Refer to section 4.5.1.2.3.3 for further detailed discussion of this issue.

changing depreciation policy, for example by amending the useful life of the assets or altering the depreciation methods (e.g., changing from the straight-line method to the declining balance method) cannot occur without disclosure about it in the financial reports, which, in turn, may attract the attention of auditors and investors (Beneish, 1998; Young, 1999).

(ii) Working capital accrual is a short-term accrual, which makes it subject to short-term managers' forecasts and managerial manipulation more than long-term total operating accrual (Peasnell et al., 2000; Atieh and Hussain, 2012). This is because working capital accrual incorporates accounts that require higher managerial judgement, such as estimation of provision of bad debt, inventory obsolescence and warranties (Peasnell et al., 2000). Therefore, working capital accrual is expected to have more frequent manipulation than total operating accrual (Atieh & Hussain, 2012). Hence, working capital accrual might be more effective in measuring earnings management practices than total operating accrual since it is more likely to reflect the discretionary behaviour of the managers (Peasnell et al., 2000; Peasnell et al., 2005; Atieh & Hussain, 2012). In addition, Peasnell et al. (2000) and Jaime and Noguer (2004) provide empirical evidence demonstrating the effectiveness of the modified Jones model in detecting earnings management practices when this is estimated by working capital accrual. Hence, the study uses the working capital of the modified Jones model and is calculated as follows:

$$\text{WCACCRUAL} = (\Delta CA_{it} - \Delta CASH_{it}) - (\Delta CA_{it} - \Delta DET_{it})$$

where: WCACCRUAL represents working capital accruals, defined as a change in current assets (ΔCA_{it}), except a change in cash ($\Delta CASH_{it}$) minus change in current liabilities (ΔCA_{it}) except a change in current debt (ΔDET_{it}).

Given this formula, the estimate of the modified Jones model with the inclusion of working capital accrual is as follows:

$$\frac{WCACCRU_{it}}{A_{it-1}} = \alpha_0 + \alpha_1 \left[\frac{1}{A_{t-1}}\right] + \alpha_2 \left[\frac{\Delta REV_{it} - \Delta REC_{it}}{A_{it-1}}\right] + \varepsilon_{it} \quad (6)$$

4.5.1.3 The control variables in the compliance-index model

The study controlled for several factors that prior studies have suggested might have an effect either on corporate governance or on earnings management. These variables are Firm size (FSZ), Leverage (LEV), Profitability (ROA), Audit quality (BIG4) and loss (LOSS). This is important because controlling for these variables might help reduce the potential omitted variable bias. However, other control variables might affect corporate governance or earnings management practices, but they are not included in the compliance-index model due to the non-availability of the data.

The following subsections discuss the empirical evidence and the theoretical foundation for selecting the control variables of the study.

4.5.1.3.1 Firm size (FSZ)

There is a conflict in the theoretical arguments in the literature that explain the effect of firm size on earnings management practices. Based on a political cost hypothesis, Watts and Zimmerman (1986) hypothesised that larger firms might adopt accounting choices that lead to a decrease in reported earnings. This is because larger and profitable firms might attract the attention of the political sector, which makes them more politically sensitive.

In this regard, Watts and Zimmerman (1986) state that politicians tend to criticise large and profitable firms because they consider high reported earnings as evidence of monopoly. Thus, politicians raised this criticism to propose a solution to the cause of these large reported earnings by firms. The reason politicians take this attitude is that this action will allow them to gain media exposure and thereby increase their likelihood of re-election (Watts & Zimmerman, 1986). In addition, Watts and Zimmerman (1986) argue that politicians are self-interested individuals who seek wealth transfer through the political process. They are motivated to increase the resources controlled by the government because this will increase their ability to grant favours. According to the political cost hypothesis or the size hypothesis, larger firms are more likely to be affected by wealth transfer (political cost) than smaller firms (Watts & Zimmerman, 1986). The most direct method used by governments or politicians to transfer firms' assets is through the tax system. Thus, income tax is one of the elements of the political cost incurred by the companies. According to Watts and Zimmerman (1978), political cost is all the potential costs that might be imposed on the firm (wealth transfer) resulting from adverse political actions, including taxes, tariffs,

government subsidies, antitrust and regulations.

Several empirical studies in the literature provide evidence in line with the political cost hypothesis (Key, 1997; Han & Wang, 1998; Cahan et al., 1997). For example, Han and Wang (1998) reported that during the Gulf crisis in 1990, oil companies in the US experienced a sharp increase in oil prices and gasoline prices. This situation led to public demands for government and politicians to take suitable action regarding the increases in oil and gasoline prices in American service stations. Government agencies and politicians responded to this demand and considered several actions. For example, an antitrust investigation against the majority of oil firms was launched by the Justice Department in the US. Also, a number of laws were introduced in Congress that aimed at imposing tax on the surplus profit of the oil firms during the Gulf crisis. In the Senate, legislation was introduced that aimed to impose a tax rate of 40% on the profits of oil firms that went above the average profit for the previous five years, starting in the 1990 tax year. Thus, in order to avoid these political costs (e.g. tax), the political cost hypothesis assumed that managers of oil firms would make accounting choices that reduced the reported profit of the firm in order to avoid political attention (Watts & Zimmerman, 1978).

Han and Wang (1998) tested the political cost hypothesis and hypothesised that the increase in the oil companies' profits in the 1990 Gulf crisis might be an indicator of political sensitivity. Thus, the study investigated earnings management practices in a sample of 76 firms, consisting of 47 firms in the crude petroleum and natural gas industry and 29 firms in the petroleum refining industry at the end of December 1990. The results indicated that petroleum refining firms used earnings management practices to decrease their reported earnings during the 1990 Gulf crisis. In contrast, this practice was not documented for crude petroleum and natural gas firms. This was because petroleum refining companies derived the majority of their revenues from sales of consumer products. Thus, it was expected that petroleum refining firms would receive more political and public attention and would be more subject to wealth transfer from political action than crude petroleum and natural gas firms during the Gulf crisis.

Furthermore, due to the possible effect of political vulnerability on the incentives of managers of large firms to use earnings management practices, the majority of recent studies in earnings management literature have controlled for firm size as a proxy for the political pressure that large companies might receive (García Lara et al., 2017; Jiang et al., 2008; Shen & Chih, 2007; Setia-Atmaja et al., 2011). Although a majority of the studies provide

empirical evidence to support the political cost hypothesis, other studies provide evidence that contradicts it. For example, García Lara et al. (2017) controlled for firm size in examining the effect of female directors on the practices of earnings management (proxy for earnings quality). Based on a sample of 4785 firm-year observations listed in the London Stock Exchange for the period 2003–2012, the results indicated a negative and significant relationship between board size and earnings quality, which means that larger firms tend to conduct more earnings management practices. In the same vein, Jiang et al. (2008) examined the effect of the level of corporate governance on earnings quality, on a sample USA firms. The study controlled for firm size along with the level of corporate governance variable that was assumed to have an effect on earnings management practices. The study documented that the coefficient of the firms' size was negative and significant at the 1% level, supporting the argument of Watts and Zimmerman (1986) which assumed that large firms are more subject to scrutiny by the public and politicians, potentially resulting in political costs being imposed on them. Thus, firms were motivated to engage in earnings management practices in order to avoid such costs. In contrast, a study conducted by Setia-Atmaja et al. (2011) included a firm size variable as a control variable when they examined the effect of board independence on constraining earnings management practices in family controlled firms listed on the Australian Securities Exchange (ASX). The findings showed that firm size is negatively and significantly associated with earnings management practices. This indicates that larger firms tend to use fewer earnings management practices.

Apart from the political cost hypothesis, there is another theoretical argument used in earnings management literature to explain the effect of firm size on earnings management practices. For example, other scholars have suggested that larger firms might conduct fewer earnings management practices. Kim et al. (2003), Cormier et al. (2013) and Sáenz González and García-Meca (2014) argue that this is because large firms tend to have well-established internal control systems and more skilled internal auditors than small firms, which in turn contributes to the quality of the disclosed financial information. Kim et al. (2003) added that large firms may engage less in earnings management than small companies due to the high reputational cost that larger companies might face if they engage in these practices. This is because larger companies might already have built up their credibility in both the business community and the domain of social responsibility. Also, they have established the credibility of the financial information they disclose to the public. This credibility stems from their ability to use the best expertise and most up-to-date information technology to produce reliable and well-timed information, by contrast with small companies. Therefore, the cost of involvement in earnings management practices may be higher for large

companies than for small companies. Hence, Kim et al. (2003) expected that large companies might avoid such involvement due to concern over their reputation. In addition, Kim et al. (2003) and Sáenz González and García-Meca (2014) assumed that larger companies might engage less in earnings management because of being under greater scrutiny than smaller firms from numerous financial analysts and investors. In contrast to this view, Richardson et al. (2003) argue that the intense scrutiny that larger firms receive from the investment and analysis communities may put more pressure on them to meet those communities' expectations, potentially leading large firms to adopt aggressive accounting practices. In line with this argument, Lobo and Zhou (2006) predicted that larger firms may have more opportunities than small firms to become involved in overstating their earnings. This is because the complexity of large firms' operations makes manipulation of their earnings less likely to be detected by external users of their financial information.

Hence, due to the existence of theoretical and empirical arguments about the possible influence of firms' size on earnings management practices, this study will control for the effect of firm size, labelling this factor FSZ. But because of the conflict in both theoretical and empirical arguments concerning the direction (i.e. positive or negative) of the influence of firm size on earnings management practices, the study makes no prediction on the sign of the coefficient. In line with prior studies (Sharma & Kuang, 2014; Tsipouridou & Spathis, 2012; F. Bekiris & Doukakis, 2011), firm size will be measured as the natural logarithm of the total assets of the firm.

4.5.1.3.2 Leverage (LEV)

According to the debt covenant hypothesis discussed by Watts and Zimmerman (1986), under positive accounting theory, managers of firms that have debt contracts may use income increasing earnings management if the firms are close to breaching accounting-based covenants. This is because lenders tend to use certain accounting numbers in debt contracts in order to restrict the managers' ability to take decisions that may reduce the value of the firms. For example, some debt contracts require the firms to maintain working capital above a certain level. This type of covenant uses accounting numbers such as current assets and current liabilities. Thus, due to these types of accounting-based covenants, the managers have an incentive to adopt accounting choices that lead to an increase in reported earnings in order avoid violations of the debt covenants. This is because a breach of the debt covenant is considered a default. In this case lenders will have the right to take action against the firms, such as seizure of collateral.

Empirically, DeFond and Jiambalvo (1994) tested the predication of the debt covenant hypothesis on a sample of 94 firms that reported debt covenant violations in their annual reports. The results indicated that violating firms had significant and positive abnormal total accrual and working capital accrual in the year prior to the violation. This means that these firms were involved in managing their earnings up. In addition, the study found evidence of positive manipulation in the year of violation.

Other theoretical arguments have suggested that firms with high leverage might face high risk, so that their managers will use earnings management practices to mitigate this risk. For instance, according to Bhuiyan et al. (2013), when firms have high leverage it indicates that the firms have a high debt contribution in their financial structure. Thus, these firms may use more earnings management practices to show efficient assets structure as well as high revenue performance in order to manage their external financing. Bartov et al. (2000) supported this view, stating that high leverage firms tend to use earnings management practices because high leverage implies high bankruptcy risk, which may lead to high litigation risk.

In contrast to this view, Setia-Atmaja et al. (2011) documented a significant and negative relationship between firm leverage and the absolute value of discretionary accrual in family firms. Setia-Atmaja et al. (2011) attribute the reduction of earnings management practices in the high leveraged firms to the effective monitoring provided by the banks for these firms.

Thus, due to the possible influence of leverage on earnings management practices, prior studies that examine the relationship between corporate governance and earnings management practices have controlled for leverage effect (e.g.,Abbadi et al., 2016; Crespí-Cladera & Pascual-Fuster, 2014; F. Bekiris & Doukakis, 2011; Peasnell et al., 2005; Chen et al., 2015; Lehmann, 2016; Jiang et al., 2008; Setia-Atmaja et al., 2011). However, empirical evidence as to whether leverage increases or decreases earnings management practices is mixed. Yet, the vast majority of the studies that control for leverage as a determinant of earnings management practices documented a positive relationship between firm leverage and earnings management practices (Crespí-Cladera & Pascual-Fuster, 2014; F. Bekiris & Doukakis, 2011; Sharma & Kuang, 2014; Jiang et al., 2008; Tsipouridou & Spathis, 2012). For example, Crespí-Cladera and Pascual-Fuster (2014) controlled for leverage when they examined the relationship between misclassified independent directors and earnings management practices in 585 Spanish firm-year observations. The study found

that financial leverage has a significant and a positive relationship with earnings management practices. Likewise, Sharma and Kuang (2014), based on a sample of 94 listed firms on the New Zealand Stock Exchange (NZX) in the years 2004 and 2005, found that high leveraged firms tend to engage more in aggressive earnings management practices. The study controlled for leverage when they examined the association between audit committee characteristics, incentives and aggressive earnings management practices. In contrast, Setia-Atmaja et al. (2011) documented that an increase in family firms' leverage led to constraint the practices of earnings management. However, Bhuiyan et al. (2013) did not find a significant relationship between the firm's leverage and earnings management practices, In a sample of New Zealand listed firms over the period 2000–2007.

Due to the conflict of the theories and the empirical evidence regarding the direction of the influence of firms' financial leverage on earnings management practices, this study makes no prediction of the sign of the financial leverage, the coefficient could be either positive or negative. Finally, this study follows prior studies (Abbadi et al., 2016; Peasnell et al., 2005; Crespí-Cladera & Pascual-Fuster, 2014; Ben-Nasr et al., 2015) in measuring the financial leverage of the firms as the book value total debt scaled by total assets, and it will be labelled **LEV.**

4.5.1.3.3 Profitability (ROA)

A number of scholars (e.g. Degeorge et al., 1999 and Dechow, 1994) in the accounting literature state that the amount of companies' earnings is considered a very important figure. This is because it provides a summary measure of the firm's performance that used by the stakeholders of the firms such as creditors, investors, suppliers and board members when they make their decisions (Degeorge et al., 1999). For example, banks might decide to grant a firm loans if it reported positive earnings (that is, those which exceed zero earnings) (Degeorge et al., 1999). In addition, board members depend on firms' earnings in evaluating the performance of management. Since, managers are usually rewarded based on the performance of the firm (Degeorge et al., 1999). Companies used earnings-based compensation in rewarding managers such as corporate executive bonus schemes and performance plans which depend on accounting earnings (Healy, 1985). For example, the managers will be awarded cash or shares if certain earnings targets are achieved. These earnings targets imply attainment of a certain amount of earnings per share, return on assets or return on equity (Healy, 1985). Given this, managers have an incentive to use income increasing earnings management practices in order to achieve these earnings targets. Healy

(1985) and Degeorge et al. (1999) in this regard argue that earnings-based compensation may also give managers an incentive to adopt income decreasing earnings management practices. This occurs when the current earnings of the companies have already exceeded the specified earnings target. This is important because a further increase in earnings may induce the firm to set a higher earnings target in future. Also, in the case of earnings being higher than the specified target, managers have an incentive to shift the excess earnings to the next period (e.g., delay the recognition of earnings) in order to make the future earnings targets are easier to be met. Hence managers have significant motivation to use income increasing or decreasing earnings management practices in order to affect the reported earnings of the companies (Healy, 1985; Degeorge et al., 1999).

However, if the firms' earnings determine the managers' incentive to manipulate the reported earnings because of being linked to the managers' compensation, Chen et al. (2015) assumed that firms with low profitability (low return on assets) will engage more in earnings management practices. Yet, Bhuiyan et al. (2013) state that return on assets gives an indication of the financial performance of the companies because it reflects the effectiveness and efficiency of the approach used by a firm in managing its resources. Thus, Bhuiyan et al. (2013) expected that firms having a high return on assets would engage in fewer earnings management practices.

Yet, due to the possible influence of the firm's profitability on managers' incentives to become involved in earnings management practices, this study controls for this effect by including return on assets (ROA) as a proxy of the firm's performance in terms of its profit. A vast majority of prior studies also control for firm's profitability (ROA) when examining the effect of corporate governance mechanisms on earnings management practices (Chen et al., 2015; Shan, 2015; Sáenz González & García-Meca, 2014; F. V. Bekiris & Doukakis, 2011; Ben-Nasr et al., 2015). However mixed results have been reported by these studies. A number of studies found that return on assets, which is the proxy of the firm's profitability, has a significant and negative relationship with earnings management practices. For example, Chen et al. (2015) controlled for firm profitability when they studied the effect of the presence of a majority of independent directors on the board in constraining earnings management practices. The study documented that firms with higher return on assets (ROA) showed fewer earnings management practices. Likewise, based on a sample of 1012 firm-year observations of companies listed on the Shanghai SSE 180 and the Shenzhen SSE 100, Shan (2015) found that ROA has a significant and negative association with the practices of earnings management. The negative association reported in the above studies could be

explained by the argument of Bhuiyan et al. (2013) who state that a high return on assets indicated that the firms had good financial performance and they managed their resources in an effective and efficient manner. Therefore, these firms may not need to resort to earnings management practices to increase their earnings. Yet, Sáenz González and García-Meca (2014) documented that return on assets was positively associated with earnings management practices. As suggested by Healy (1985) and Degeorge et al. (1999), the high increase in both earnings management practices and return on assets may be due to the use of income increasing earnings management practices by the managers in order to show that the firm is making profits and thus to gain a high compensation value. This occurs because managers are usually rewarded based on the financial performance of the companies. Yet, F. V. Bekiris and Doukakis (2011) examined the effect of the level of corporate governance mechanisms (governance index) on earnings management practices, based on a sample of 427 firms listed on the Athens, Milan and Madrid Stock Exchanges. the study included return on assets among its control variables and, reported that return on assets has no significant relationship with earnings management practices. Similar results were documented in Ben-Nasr et al.'s (2015) study. Therefore, due to the conflict among the theories and within the evidence seeking to explain the effect of return on assets (ROA) on earnings management practices, this study makes no prediction regarding the sign of this coefficient. However, following prior studies (Chen et al., 2015; Shan, 2015; Sáenz González & García-Meca, 2014; F. V. Bekiris & Doukakis, 2011; Ben-Nasr et al., 2015), return on assets (ROA) is used as a proxy for firm profitability and measured as the ratio of net income to total assets. The variable is labelled ***ROA*****.**

4.5.1.3.4 Audit quality (BIG4)

Among the frequently used control variables in corporate governance and earnings management studies is the size of the audit firm, because it represents a proxy of the audit quality (DeAngelo, 1981). Yet, previous empirical studies documented that firms employing Big 4 auditors tend to report lower earnings management practices (Alzoubi, 2016), lower accounting fraud (Lennox & Pittman, 2010) and lower accounting restatements (Eshleman & Guo, 2014) than firms that employ non-Big 4 auditors.

The argument explaining the effectiveness of these big audit firms has been discussed in previous auditing literature, where Palmrose (1988) and DeAngelo (1981) developed a theoretical argument related to the audit quality of the big accounting firms. First of all, audit quality could be defined in terms of level of assurance provided by the auditor, which

confirms that the audited financial statements contain no material misstatement or omission (Palmrose, 1988). The higher the level of assurance, the higher the audit quality services. Thus, when the audit quality is very high, the probability of the occurrence of audit failure (which refers to an audited financial statement containing material misstatement or omission) becomes less likely (Palmrose, 1988).

Yet, regarding the theoretical argument related to the audit quality of the big accounting firms, Palmrose (1988) suggests that larger audit firms spend generously to build their brand names, lower litigation risks and protect their reputation. This is because the audit firms gain their value from the expectation of the users of financial statements as they expect that the audit firms can detect and report any material misstatements and omissions in the company's financial statements. If the audit firms do not meet this expectation, it constitutes an audit failure. As a consequence, the users/clients might have incurred losses related to the misleading information in the financial statements that was not uncovered by the audit firms. Given this, the audit failure will affect the users of the financial statements, possibly leading them to take legal action against the audit firms (litigation) (Palmrose, 1988).

Palmrose (1988) and DeAngelo (1981) suggest that large audit firms have an incentive to avoid the risk of litigation by providing high quality audit services because the litigation is very costly for them. For example, the cost of litigation includes the cost of the sanctions that might be imposed on the firms by professional and regulators' bodies (Palmrose, 1988). Also, the cost of litigation entails the costs associated with loss of the audit firms' reputation. As argued by DeAngelo (1981), this represents a cost because large audit firms have a large number of clients who might not deal with the audit firm again if it is found that it has not reported or uncovered a material misstatement in a particular client's financial statements. Also, the damage to the reputation of the audit firm might lead to a decrease in its future audit fees (DeAngelo, 1981).

Therefore, due to the possible loss (litigation risk and reputation loss) that large audit firms might face if they have not provided proper audit services, Abdul Rahman and Haneem Mohamed Ali (2006) state that large audit firms have an incentive to detect and report questionable accounting practices found in the clients' financial statements. Also, they might be able to force the management of the company to apply the best accounting practices as recommended by accounting standards. These in turn contribute to the high quality of audit services provided by large audit firms.

However, Khalil and Ozkan (2016) question the theoretical argument states that large audit firms have an incentive to provide high quality audits in order to protect their reputation and avoid litigation risk. Khalil and Ozkan (2016) claim that this argument might not be applicable in developing countries settings where litigation is less likely to occur due to weak enforcement by the law and weak investors' protections in these countries. This in turn might lead to large audit firms providing low-quality audit services in developing countries. Khalil and Ozkan (2016) examined this assumption by studying the effect of employing Big 4 audits on the practices of earnings management in a sample of 125 firms listed in Egypt over the period 2005–2010. The study documented that firms audited by Big 4 audit firms had lower magnitude of earnings management practices. This means that even in a context of low law enforcement and weak investors' protection, in which these big audit firms might face a low risk of litigation, they are effective in providing high quality audit services.

In addition, Boone et al. (2010) and Eshleman and Guo (2014) argue that large audit firms are expected to provide high quality audit services because of having more resources to spend on training their auditors and developing their technology. This in turn might contribute to the competence of the audit firms, which results in high audit quality services. Boone et al. (2010) added that large audit firms are more likely to be independent of their clients and thus better able to refuse to collude with them if they asked the audit firms to issue a clean (unqualified) audit opinion, while the clients' financial statements do not uphold this opinion. Also, large audit firms are better able to constrain clients' earnings management practices. In line with this argument, Khalil and Ozkan (2016) state that high quality audit services are expected to constrain the practices of earnings management because one of the key responsibilities of an external auditor is to confirm that the financial statements of the client's firm are prepared according to GAAP and represent to some extent the accurate financial situation and operational outcomes of the client's firm. As a consequence, when the external audit issues this confirmation, the credibility of the client's financial statement will be enhanced accordingly. Moreover, Khalil and Ozkan (2016) state that the external auditors are authorised by the auditing principle to engage with the audit committee of the firm through debates and discussions in order to insure the quality, not only the acceptance, of the applied accounting standards in the client's firm. Therefore, the high audit quality is anticipated to constrain earnings management practices.

Given the above theoretical discussion, several studies in corporate governance and earnings management literature have added the quality of the audit firm as a control variable (Jiang et al., 2008; Setia-Atmaja et al., 2011; Alzoubi, 2016; Alzoubi, 2017). This is because it has

a positive effect in reducing earnings management practices. Yet, some of the studies found that large audit firms reduced earnings management practices (Jiang et al., 2008; Alzoubi, 2016; Alzoubi, 2017), while other studies reported no significant relationship between these two variables (Sharma & Kuang, 2014; Setia-Atmaja et al., 2011). For example, Jiang et al. (2008) studied the level of corporate governance mechanisms in relation to earnings quality. They controlled for the effect of the audit quality on earnings management practices. The study found that the absolute value of the discretionary accrual is less for firms that were audited by Big 4 audit firms. This result indicated that the Big 4 audit firms are more likely to uncover earnings management practices than non-Big 4 audit firms . Likewise, Alzoubi (2016) studied the influence of audit quality on earnings management practices by using generalised least square regression. The study utilised a sample of 86 firms listed on the Amman Stock Exchange from 2007 to 2010, and reported that companies appointing Big 4 audit firms were found to have significantly fewer earnings management practices than company hiring non-Big 4 audit firms. A further study conducted by Alzoubi (2017) showed that audit quality (measured by auditor tenure, size, specialisation, and independence) had the ability to constrain the practices of earnings management.

Unlike these studies, a number of studies in the literature indicated that there was no significant effect of audit quality on earnings management practices (Sáenz González & García-Meca, 2014; Sharma & Kuang, 2014; Setia-Atmaja et al., 2011). For example, Sharma and Kuang (2014) investigated the effect of audit committee characteristics on earnings management practices on a sample of 194 firm-year observations listed on the New Zealand Stock Exchange (NZX). The study found that audit quality had no significant relationship with earnings management practices. In line with this result, Setia-Atmaja et al. (2011) documented that the coefficient of the audit quality was not significantly associated with earnings management practices.

Nonetheless, based on the theoretical argument provided by Palmrose (1988) and DeAngelo (1981), the current study will expect that the audit quality will be effective in constraining the practices of earnings management. Thus, it anticipates a negative relationship between audit quality and earnings management practices. Following prior studies (Setia-Atmaja et al., 2011; Jiang et al., 2008; Sáenz González & García-Meca, 2014), the proxy of the audit quality is a dummy variable that takes the value of 1 if the firm employs one of the Big 4 audit firms in the time t to perform their audit services or zero otherwise. The variable is labelled (BIG4).

4.5.1.3.5 Loss (LOSS)

Theoretically, several factors explain why firms are motivated to use earnings management practices to avoid reporting earnings decreases and losses.

(i) Firms benefit from reporting higher earnings as they obtain various benefits from their stakeholders when they report higher earnings values. According to Bowen et al. (1995), the customers of firms that reported higher earnings might make them willing to pay a higher price for firms' products because the customers assumed that such firms would fulfil their implicit warranty and service agreements. Likewise, suppliers of firms that reported higher earnings might offer better terms because these firms are more likely to pay for their current purchases on time and make greater purchases in the future.

(ii) Earnings benchmarks such as zero earnings or expected earnings are of significant importance to the firms' stakeholders as they use them as a reference point to define whether the firms are making gains or losses (Kahneman & Tversky, 1979). Consequently, investors and other market participants assess the financial success of firms based on their ability in achieving earnings benchmarks (Kahneman & Tversky, 1979). Hence, using earnings management to avoid disclosing earnings decreases and losses can prevent the stakeholders from taking negative actions against the firm and its management (Healy & Wahlen, 1999).

(iii) Firms are motivated to report higher earnings as some contractual terms are made based on accounting numbers (Watts & Zimmerman, 1986). For example, some debt contracts require the firms to maintain a certain amount of working capital. This type of covenant uses accounting numbers such as current assets and current liabilities (Watts & Zimmerman, 1986). Therefore, due to these types of accounting-based covenants, the managers have the incentive to adopt accounting choices that lead to an increase in the reported earnings to avoid violations of the debt covenants (Watts & Zimmerman, 1986). This is because a breach of the debt covenant is considered a default. In this case, lenders will have the right to take action against the firms, such as the seizure of collateral (Watts & Zimmerman, 1986).

(iv) In a firm that adopts a compensation plan based on reported earnings, reporting earnings decreases or losses might reduce the compensation values received by managers. Therefore, managers might have an incentive to increase the firm's reported earnings to obtain a higher compensation value (Healy, 1985).

Based on the discussion above, it is expected that firms that experience earnings decreases or losses will use earnings management practices to push the firm's earnings up to avoid losing the financial advantages associated with reporting higher earnings values. Empirically, several studies have documented that firms used earnings management practices when they experienced losses. For example, Tran and Duong (2020) reported that Vietnamese listed companies conducted income-increasing earnings management practices to avoid reported losses. Likewise, Makarem et al. (2018) documented that both US firms that reported a small loss and firms that reported a small profit were conducting upward earnings manipulation through accrual management and real activities manipulations.

Since prior studies (e.g.,Tran & Duong, 2020; Makarem et al., 2018) documented that loss-making firms conducted income-increasing earnings management practices, the current study expects that firms that experience losses will have an incentive to involve in earnings management practices. Therefore, a dummy variable for current year losses (LOSS) is included to control for any possible differences in earnings management behaviour between profit and loss firms. LOSS is measured as a dummy variable that takes the value of 1 if the firm reports losses in a year t or zero otherwise.

In order to examine the relationship between firm-level corporate governance and earnings management practices, assuming all the relations are linear, the study used the random-effect model whereby the dependent variable, earnings management, is regressed on the independent variable, which is firm-level corporate governance, as follows:

$$EM_{it} = \alpha_0 + \beta_1 SCGI_{it} + \beta_2 FSZ_{it} + \beta_3 LEV_{it} + \beta_4 ROA_{it} + \beta_5 \text{BIG4}_{it} + + \beta_6 LOSS_{it} + \varepsilon_{it} \quad (7)$$

Table 4.4 below presents the definitions of all the variables in Equation 7.

Table 4.4: Summary of variables used for the Compliance-Index Model

Dependent variable	**Definition**
EM	The absolute value of discretionary accrual represents the firm level of earnings management practices as measured by the Modified Jones Model (1995).
Independent variables	
SCGI	Corporate governance compliance and disclosure index, consisting of (142) Provisions. Governance provisions extracted mainly from 2017 Saudi corporate governance code. A value of 1 is given to each corporate governance provision disclosed by the firms and 0 otherwise; the index scaled to the value between 0% and 100%.
Control Variables	
FSZ	Measure as the natural logarithm of the total assets of the firm.
LEV	Measure as the book value of total debt scaled by total assets.
ROA	Measure as the ratio of net income to total assets.
BIG4	The dummy variable that takes the value of 1 if the firms employ one of the big 4 audit firms in the time t to perform their audit services or zero otherwise.
LOSS	The dummy variable that takes the value of 1 if the firm reports losses in a year t or zero otherwise.

4.5.2 The Equilibrium-Variable Model

The equilibrium-variable model seeks to examine the effect of the board of directors' characteristics, audit committee characteristics and ownership structure on earnings management practices to answer the second, third and fourth research questions of the study. Hence, the following subsections discuss the variables used in the equilibrium-variable model.

4.5.2.1 The Dependent Variables: Earnings management

The dependent variable in the equilibrium-variable model is the absolute value of discretionary accrual, which is a proxy of earnings management practices, measured using the modified Jones model (Dechow et al., 1995) as in Equation 5. Sections 4.5.1.2.4 provided detailed explanations of the rationale of selecting the model, modifications introduced to the model and the definitions of the variables used to estimate the modified Jones model (Dechow et al., 1995).

4.5.2.2 The Independent Variables: Individual Corporate Governance Mechanisms

The equilibrium-variable model seeks to examine the association between individual corporate governance variables and earnings management practices. Therefore, the selected explanatory variables in this model include Strict Independent Directors (STRIND), Audit Independent Index (AUDINDEX), Board Size (BRDSIZE), Board Meeting (BRDMEET), Audit Meeting (AUDMEET), Directors with Multiple Directorships (INTERLOCK), Family Members on the Board (FAMMB), Government Ownership (GOVOWN), Institutional Ownership (INSTOWN), Family Ownership (FAMOWN) and Blockholder Ownership (BLOCKOWN). Chapters Two and Three discussed the theoretical and empirical literature regarding the relationship between these governance mechanisms and earnings management practices. Table 4.5 presents the definitions of the explanatory variables in the equilibrium-variable model.

Table 4.5: Summary of variables used for the equilibrium-variable model

Dependent variable	Definition
EMJ	The absolute value of discretionary accrual represents the firm level of earnings management practices as measured by the Modified Jones Model (1995).
Independent variables	
STRIND	The proportion of strict independent directors to total board members that meets all the independence criteria in the 2017 Saudi CG index, which are: 1) if he/she does not hold five per cent or more of the shares of the company or any other company within its group; 2) if he/she is not a relative of a person who owns five per cent or more of the shares of the Company; 3) if he/she is not a representative of a legal person that holds five per cent or more of the shares of the Company or any company within its group; 4) if he/she is not a relative of any member of the Board of the Company or any other company within the Company's group; 5) if he/she is not a relative of any Senior Executive of the Company or any other company within the Company's group; 6) if he/she is not a Board member of any company within the group of the Company for which he/she is nominated to be a Board member. 7) if he/she is not an employee or was formerly an employee, during the preceding two years, of the Company, of any party dealing with the Company or any company within its group, such as external auditors or main suppliers; or if he/she, during the preceding two years, held a controlling interest in any such parties; 8) if he/she has not a direct or indirect interest in the businesses and contracts executed for the Company's account; 9) if he/she has not received financial consideration from the Company in addition to the remuneration for his/her membership of the Board or any of its committees exceeding an amount of (SAR 200,000) or 50% of his/her remuneration of the last year for the membership of the board or any of its committees, whichever is less. 10) if he/she does not engage in a business in which he competes with the Company or conducts businesses in any of the Company's activities. 11) if he/she has served for more than nine years, consecutive or inconsecutive, as a Board member of the Company.
AUDINDEX	Independent disclosure index for the independent directors in the Audit Committee consists of the 11 independence criteria recommended by the 2017 Saudi Corporate Governance Code. A value of 1 is assigned if the independent member meets one of the 11 independence criteria and 0 otherwise; the index score ranges from 1 to 11.
BRDSIZE	The number of directors on the board.
BRDMEET	The number of board meetings held annually by the board of directors.
AUDMEET	The number of audit committee meetings.
INTERLOCK	The proportion of directors on the board having at least one additional directorship in another company.
FAMMB	The proportion of family members on the board to total board members.
GOVOWN	Percentage of shares held by government shareholders.
INSTOWN	Percentage of shares held by institutional shareholders.
FAMOWN	Percentage of shares held by family shareholders.
BLOCKOWN	Percentage of shares held by individual shareholders who own more than 5% of the total shares of the firm.
Control Variables	
FSZ	Measure as the natural logarithm of the total assets of the firm.
LEV	Measure as the book value of total debt scaled by total assets.
ROA	Measure as the ratio of net income to total assets.
BIG4	The dummy variable that takes the value of 1 if the firms employ one of the big 4 audit firms in the time t to perform their audit services or zero otherwise.
LOSS	The dummy variable that takes the value of 1 if the firm reports losses in the year or zero otherwise.

4.5.2.3 The Control Variables of the equilibrium-variable model

The control variables used in the equilibrium-variable model to examine the relationship between corporate governance mechanisms and earnings management practices are Firm size (FSZ), Leverage (LEV), Profitability (ROA), Audit quality (BIG4) and Loss (LOSS). Subsection 4.5.1.3 discusses the theoretical foundation and the empirical evidence for selecting these control variables.

To investigate whether earnings management practices are explained by the individual corporate governance variables in the equilibrium-variable model, Feasible Generalised Least Squares (FGLS) regression is employed, whereby the dependent variable, earnings management, is regressed on the independent variables, which are the individual corporate governance characteristics applied to Equation 8, as follows:

$$\begin{aligned} EM_{it} = {} & \alpha_0 + \beta_1 STRIND_{it} + \beta_2 AUDINDEX_{it} + \beta_3 BRDSIZE_{it} \\ & + \beta_4 BRDMEET_{it} + \beta_5 AUDMEET_{it} + \beta_6 INTERLOCK_{it} \\ & + \beta_7 FAMMB_{it} + \beta_8 GOVOWN_{it} + \beta_9 INSTOWN_{it} + \beta_{10} FAMOWN_{it} \\ & + \beta_{11} BLOCKOWN_{it} + \beta_{12} FSZ_{it} + \beta_{13} LEV_{it} + \beta_{14} ROA_{it} + \beta_{15} BIG4_{it} \\ & + \beta_{16} LOSS_{it} + \varepsilon_{it} \end{aligned} \quad (8)$$

Table 4.5 presents the definitions of all the variables in Equation 8.

4.6 Summary of the methodology chapter

This chapter discussed the research design used in this study. It examined the philosophical assumptions of the research methodology. This study employs the positivism paradigm. This paradigm guides the researcher to select a quantitative research strategy that focuses on collecting and examining numerical data. Also, since this study adopts a positivism paradigm, a deductive approach is chosen in this study that involves theory testing and developing a hypothesis to investigate the validity of the adopted theory in the research. Also, this chapter explained the research paradigms, research strategy and research approach and their applications within the study context. Also, the chapter discussed the process of selecting a sample of 112 Saudi-listed firms from 2006 and 2007. Also, the chapter presented the measurements of the variables used in this study. For example, the chapter presented the process of constructing SCGI. This chapter also demonstrated the measures for the discretionary accruals used as a proxy for earnings management in this study. Specifically, the study used Modified Jones Model (1995) to conduct this study's primary analysis. It used the Kothari (2005) model and short-term earnings management model estimated by computing the discretionary working capital accrual of the Modified Jones Model (1995) for the robustness tests of this study. The chapter also demonstrated the primary sources of the data of this study. The corporate governance data was extracted from the firms' annual reports. Accounting and financial data were obtained from the DataStream database, whereas ownership data were collected from the Thomson Reuters database. The chapter presented the reliability and validity tests that were conducted for SCGI. The findings of these examinations show that SCGI exhibited a high level of reliability and validity in this study. Finally, the chapter discussed several control variables used by prior studies that may affect corporate governance or earnings management. These variables are Firm size (FSZ), Leverage (LEV), Profitability (ROA), Audit quality (BIG4) and loss (LOSS). The next chapter discusses the empirical findings of this study.

CHAPTER FIVE

EMPIRICAL FINDINGS AND DISCUSSION

5 Introduction

This chapter aims to present and discuss the results of this research. To achieve this aim, this chapter begins first by presenting the descriptive statistics of the variables used in the regression analysis of this study. Second, it discusses the OLS assumptions to determine whether the OLS regression is an appropriate estimation method for the main analysis of the study. Third, it discusses the results of the Compliance-Index model, which seeks to examine the relationship between firm-level corporate governance and earnings management practices to answer the first research question. Fourth, this chapter discusses the results of the Equilibrium-Variable Model, which examined the effect of the board of directors' characteristics, audit committee characteristics and ownership structure on earnings management practices. Fifth, this chapter discussed the results of the role of family ownership in the association between firm-level corporate governance and earnings management practices. Sixth, this chapter examines the robustness of the results by using alternative earnings management models and different family control proxy. Finally, this chapter ends by presenting the results of additional tests and solving the endogeneity issue in this study.

This chapter is organised as follows: the descriptive statistics of the constructed Saudi Corporate Governance Index (SCGI) based on the entire sample are discussed in Section 5.1. Furthermore, the descriptive statistics of the level of compliance with SCGI provisions based on sub-indices and for each year from 2006 to 2017 are discussed in Section 5.2. The chapter also presents the descriptive statistics of the variables in the equilibrium-variable model and the descriptive statistics of additional governance variables in sections 5.3 and 5.4, respectively. While section 5.5 presents the descriptive statistics of the 11 Individual Independence Criteria Recommended by the 2017 SCGC. Regarding the empirical results, section 5.7.1 reports the results and the discussion of the compliance-index model. In Section 5.7.2, the results and discussion of the Equilibrium-Variable Model are presented. Section 5.7.3 reports the results and discussion of the role of family ownership in the association between firm-level corporate governance and earnings management practices. The

robustness and additional tests are discussed in sections 5.7.4 and 5.7.5, respectively, while the endogeneity issue is discussed in section 5.7.6.

5.1 Descriptive Statistics of the SCGI based on the Full Sample

As discussed in Chapter Four, the current study developed a corporate governance index to examine the effect of the level of compliance with SCCG provisions on reducing earnings management practices in a sample of 112 non-financial Saudi listed firms. The SCGI consists of 142 corporate governance provisions, which were derived mainly from the SCGC. Table 5.1 presents the summary descriptive statistics relating to the level of compliance of Saudi listed firms with the SCGI provisions and their subindices for the pooled sample and for each of the 12 years examined in this study.

Regarding SCGI, the summary descriptive statistics in Table 5.1 suggest that there is a high variation of the compliance score in Saudi firms. For example, as seen in Table 5.1 panel A, the SCGI score ranges from a minimum of 7.75% to a maximum of 87.32%, with an average of 59.94%. The mean of 59.94% for the SCGI suggests that, in general, Saudi firms comply with more than half of the 142 provisions in the SCGI. However, the variability of the compliance score in the SCGI indicates that some companies within the sample do not follow some of the rules in the 2017 corporate governance code. So far, Saudi companies have not yet reached the phase of full compliance with the corporate governance code. This may relate to the flexibility given to Saudi companies through the "compliance or explain" approach rather than "compliance or penalties".

Furthermore, the results in Table 5.1 panel A and figure 5.1 suggest that compliance with the SCGI provisions generally increases over time, with the aggregate compliance levels increasing consistently from 24.80% in 2006 to 76.80% in 2017, accounting for a 52-percentage point increase over the 12-year period examined.

Additionally, Table 5.1 panel A and figure 5.1 indicate that the highest level of compliance (76.80%) for Saudi firms was in 2017. This is because the new corporate governance code was issued in 2017, which improved the corporate governance practices in Saudi firms. In contrast, Saudi firms had the lowest level of compliance in the 2006 and 2007 years (24.80 % and 36.51% respectively) because the adoption of a corporate governance mechanism in Saudi Arabia started in 2006. it is expected that corporate governance practices would not

be effective enough at this time due to the lack of experience in applying the corporate governance mechanism in Saudi firms.

Table 5.1: Summary statistics of dataset for SCGI and sub-indices (%) between 2006 and 2017

	All	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Panel A: SCGI													
Mean	59.94	24.80	36.51	43.94	52.04	57.80	61.19	62.80	63.92	64.40	65.02	65.90	76.80
STD	13.52	9.70	12.42	10.63	8.85	6.23	5.82	5.46	4.94	4.54	4.43	4.40	4.77
Min	7.75	7.75	8.45	15.49	23.94	45.78	45.07	50.00	51.41	52.82	50.00	56.34	64.80
Max	87.32	43.66	58.45	66.90	68.31	72.54	74.65	75.35	77.47	77.47	77.47	78.87	87.32
Panel B: Board of Directors sub index													
Mean	78.25	41.52	58.33	68.49	75.22	79.79	81.01	82.13	81.95	82.20	82.33	82.18	86.57
STD	15.25	27.62	23.95	19.72	13.50	8.241	8.38	7.64	7.72	8.11	6.73	6.95	6.56
Min	0	0	0	7.41	25.93	40.74	37.04	55.56	55.56	55.56	62.96	55.56	66.67
Max	100	85.19	88.89	96.30	92.59	96.30	92.59	96.30	92.59	96.30	96.30	96.30	100
Panel C: Board Sub-Committees subindex													
Mean	51.91	11.37	22.58	29.87	42.18	49.93	53.77	56.61	57.83	58.06	58.16	58.87	70.50
STD	17.68	10.59	17.17	17.27	16.58	11.23	9.51	8.24	8.01	7.32	7.11	7.23	8.47
Min	0	0	0	0	0	18.00	12.00	40.00	42.00	42.00	42.00	44.00	46.00
Max	96.00	48.00	58.00	64.00	70.00	76.00	74.00	76.00	86.00	86.00	80.00	78.00	96.00
Panel D: The Disclosure and Transparency subindex													
Mean	55.46	21.47	34.27	42.25	47.53	52.30	55.81	56.82	57.71	58.19	59.52	60.85	76.48
STD	14.29	8.56	11.80	10.19	8.54	8.34	7.67	8.11	7.42	6.69	6.50	6.33	8.74
Min	2.27	2.27	6.82	18.18	27.27	29.55	38.64	29.55	34.09	40.91	40.91	43.18	47.73
Max	88.64	38.64	59.01	61.36	63.64	68.18	77.27	77.27	75.00	72.73	75.00	79.55	88.64
Panel E: The Internal Control subindex													
Mean	62.86	18.42	25.00	34.75	43.53	54.32	66.28	66.09	69.15	72.45	75.84	76.94	84.11
STD	26.47	17.63	19.35	20.30	18.91	20.79	20.64	20.70	18.70	19.16	19.25	18.92	16.14
Min	0	0	0	0	0	20.00	20.00	20.00	20.00	20.00	20.00	40.00	40.00
Max	100	60.00	80.00	80.00	80.00	100	100	100	100	100	100	100	100
Panel F: The Rights of Shareholders subindex													
Mean	69.97	60.93	63.02	62.80	65.95	66.76	67.89	68.23	70.95	71.35	71.36	72.49	82.21
STD	10.79	10.79	10.67	12.34	8.33	8.76	11.57	11.19	7.91	8.32	8.71	7.30	8.26
Min	7.69	7.69	23.08	15.39	23.08	15.36	15.39	15.39	15.39	23.08	23.08	23.08	61.54
Max	100	69.23	76.92	76.92	76.92	84.62	84.62	84.62	84.62	84.62	92.31	92.31	100
Panel G: The Implementation of Corporate Governance subindex													
Mean	46.08	0.88	9.62	15.85	27.94	38.68	47.67	50.73	54.97	57.48	58.75	60.66	62.80
STD	25.67	5.41	16.62	21.61	22.75	22.64	21.41	21.81	18.75	16.43	16.43	14.35	13.97
Min	0	0	0	0	0	0	0	0	0	0	0	33.33	33.33
Max	100	33.33	66.67	100	100	100	100	66.67	100	100	100	100	100

Notes: This table presents descriptive statistics of the aggregate levels of compliance with SCGI based on sub-indices from 2006 to 2017.

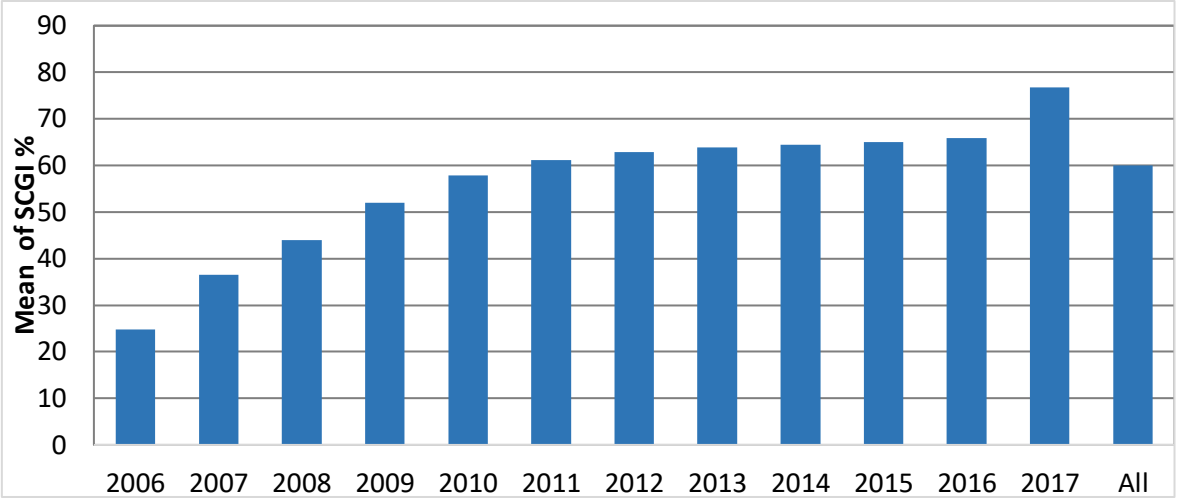


Figure 5.1: Level of compliance with the SCGC between 2006 and 2017 using computed means

However, these results are similar to the findings in developing countries. For example, Al-Bassam et al. (2015) examined the level of the compliance of Saudi listed firms by using the Saudi CG index, consisting of 65 provisions from the year 2004 – 2010. The study found that the average level of compliance was 44.61%. Additionally, they found that the level of compliance increased over time. Likewise, Abbadi et al.'s (2016) index ranges from 2 to 10 with an average of 5.396, which indicates that the adoption of corporate governance rules by Jordanian companies is not ideal. Additionally, Abbadi et al. (2016) found that there was an incremental increase in the level of compliance over time in Jordanian companies. The incremental increase in the level of corporate governance compliance was also found in the US context (Jiang et al., 2008).

The increase in the level of compliance over the sample period could be attributed to the continued reforms of corporate governance regulations in Saudi Arabia. Since the introduction of the first Saudi corporate governance code in 2006 by CMA, it has been constantly improved and updated throughout the years. For example, CMA updated the governance code in 2008 by mandating the establishment of the Audit Committee in all Saudi firms. In 2010, further regulations related to the Remuneration and Nomination committee and independent directors were added to the code, and the Remuneration and Nomination committee became mandatory in the same year. In 2011, the governance code was updated by making the regulations related to internal control rules mandatory in Saudi firms. In 2012 updates, the code mandated some of the regulations related to the rights of shareholders and board of directors. Finally, in 2017, CMA made a drastic change to the Saudi Corporate Governance Code and added additional governance requirements to all its sections. The new corporate governance code consists of 12 parts and 98 articles, all of which

are mandatory except for 16 articles (Algoere & Ali, 2019; Al-Faryan, 2020). However, the improvement in the level of compliance with SCGC provisions over the sample period might indicate the efficiency of the UK-style 'comply or explain' approach adopted by the Saudi corporate governance code in the Saudi context.

5.2 Descriptive Statistics of the SCGI Based on the Sub-Indices

In terms of the sub-indices of SCGI, the statistics in Panels B, C, D, E, F and G of Table 5.1 suggest that there is a substantial degree of dispersion in the distribution of each sub-index. Similar to SCGI, there is also an increasing level of compliance with respect to each sub-index over the 12 years investigated (2006-2017). For example, as demonstrated in Table 5.1 panel B, the board of directors sub-index ranges from a minimum compliance rate of 0% to a maximum of 100%, with the average Saudi firm complying with 78.25% of the 27 CG provisions investigated. The Internal Control, The Rights of Shareholders and The Implementation of Corporate Governance, in Table 5.1 panel E, F and G respectively, present a similar level of variations as in the board of director sub-index, in which these sub-indices range from a minimum of 0% to a maximum of 100%. Additionally, the aggregate compliance levels of the board sub-committees in panel C range from a minimum of 0% to a maximum of 96%, with the average Saudi firm complying with 51.91% of the 50 CG provisions investigated.

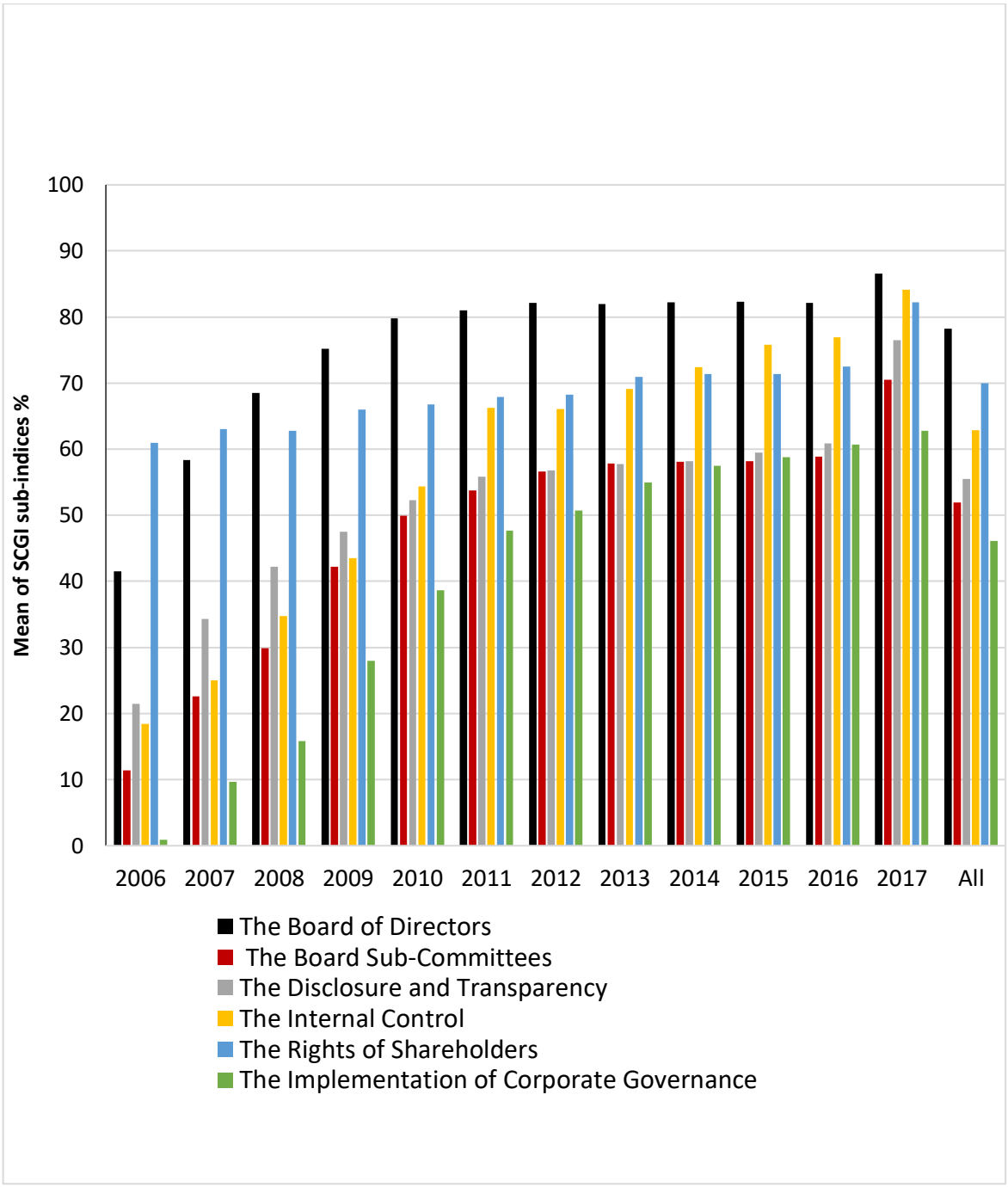


Figure 5.2: the level of compliance with the SCGI sub-indices between 2006 and 2017, using computed means

As seen in Figure 5.2, there are variations in the aggregated level of compliance based on the sub-indices. The level of compliance also improves over time. In addition, the results in Table 5.1 (panel B and F), as well as figure 5.2, suggest the Saudi firms present greater compliance with the provisions related to The Board of Directors and The Rights of Shareholders sub-indices, in which Saudi firms, on average, comply with 78.25% of the 27 CG provisions available in the Board of Directors sub-index, and they comply on average with 69.97% of the 13 CG provisions that relate to The Rights of Shareholders sub-index. In contrast, results in Table 5.1 panel G and figure 5.2 reveal that Saudi firms have a

relatively low level of compliance with provisions related to The Implementation of Corporate Governance subindex, in which the Saudi firms, on average, comply with 46.08% of the 3 CG provisions in this sub-index. However, for the remaining 3 subindices (Board Sub-Committees, The Disclosure and Transparency and The Internal Control) in Panel C, D and E, in table 5.1, the aggregate compliance levels of these aforementioned subindices are intermediate, ranging between 51.91% and 62.98%.

The high level of compliance with the Board of Directors subindex could be attributed to the fact that the provisions of these subindices are the main focus of the regulatory bodies, such as the CMA and Ministry of Commerce. For example, since introducing the first Saudi corporate governance code in 2006, CMA has added additional governance provisions related to the board of directors. For instance, in 2010, CMA expanded and amended the definition of independent directors and accordingly introduced 7 independence criteria for the independent directors of Saudi firms. However, the high level of compliance with the rights of shareholders provisions could be explained by the fact that the majority of the provisions in this sub-index are mandatory under the Companies Act issued by the Ministry of Commerce (Al-Twaijry et al., 2002).

5.3 Descriptive Statistics of the Explanatory Variables in the Equilibrium-Variable Model

Table 5.2 presents the descriptive statistics for the dependent variables, independent variables, and control variables in the equilibrium-variable model. Similar to the SCGI, the distribution of all dependent variables, independent variables, and control variables displays wide variations.

Regarding the variables of board characteristics, Table 5.2 reveals that Strict independent directors (STRIND) range from a minimum of 0 to a maximum of 1, with the average Saudi firm having about 0.21 (21%) of its board members being strict independent directors. This figure indicates that about one-fifth of independent directors in Saudi firms have passed the 11 joint independence criteria. However, Table 5.3 demonstrates that Saudi firms declared on average 0.49(49%) of non-strict independent directors on their board (BRDIND). As seen in Table 5.2, this figure decreases to 21% when considering strictly independent directors over board size (STRIND). This evidence indicates that Saudi firms comply with the SCGC recommendations regarding having a majority of the independent directors on their board;

however, most of these independent directors are not truly independent as they do not comply with at least one of the 11 independence criteria recommended by SCGC.

The figures of strict and non-strict independent directors are consistent with the Crespí-Cladera & Pascual-Fuster (2014) study. Crespí-Cladera & Pascual-Fuster (2014) report that, on average, Spanish listed companies have 32.5% of their board members classified as non-strict independent directors. Nonetheless, this figure is decreased to 14.2% when considering strict independent directors who pass all the 8 independence criteria in their study.

In Table 5.2, the aggregate mean scores of the Audit independence index AUDINDEX range from a minimum of 0 to a maximum of 11, with the average Saudi firm complying with 7 independent criteria out of 11. This figure indicates that the majority of the Saudi firms have independent directors on their Audit Committees who are not strictly independent. In principle, the independent directors might be classified by the firm as independent directors; however, in practice, these independent directors might not be genuinely independent since they violate at least one or more of the independence criteria recommended by the Saudi corporate governance code.

Table 5.2: descriptive statistics of the dependent variable, independent variables, and control variables in the equilibrium-variable model for all (994) firm years.

Variables	Mean	STD	Min	Max
Dependent variable				
EMJ	0.046	0.049	0.0000346	0.508
Independent variables				
STRIND	0.21.	0.232	0	1
AUDINDEX	7.71	4.138	0	11
BRDSIZE	8.11	1.894	0	13
BRDMEET	5.08	2.072	0	17
AUDMEET	4.71	2.536	0	17
INTERLOCK	0.54	0.298	0	1
FAMMB	0.22.	0.209	0	1
GOVOWN (%)	7.46	15.651	0	75.70
INSTOWN (%)	10.19	16.915	0	69.99
FAMOWN (%)	13.73	19.249	0	70.00
BLOCKOWN (%)	1.65	5.365	0	69.00
Control variables				
FSZ	14.45	1.485	9.86	19.64
LEV	0.21	0.189	0	0.698
ROA	0.06	0.213	-5.816	0.44
BIG4	0.57	0.495	0	1
LOSS	0.166	0.372	0	1

Notes: Variables are defined as follows: Earnings management (EMJ): The absolute value of discretionary accrual represents the firm level of earnings management practices as measured by Modified Jones Model (1995). Strict Independent Directors (STRIND): The proportion of strict independent directors to total board members who meet all the independence criteria in the 2017 SCGC. Audit Independent Index (AUDINDEX): Independent disclosure index for the independent directors in the audit committee, consisting of the 11 independence criteria in the 2017 SCGC. A value of 1 is given if the independent member meets one of the 11 independence criteria and 0 otherwise. Board Size (BRDSIZE): The number of directors on the board. Board Meeting (BRDMEET): The number of board meetings held annually by the board of directors. Audit Meeting (AUDMEET): The number of audit committee meetings. Directors with Multiple Directorships (INTERLOCK): The proportion of directors on the board having at least one additional directorship in another company. Family Members on the Board (FAMMB): The proportion of family members on the board to total board members. Government Ownership (GOVOWN): Percentage of shares held by government shareholders. Institutional Ownership (INSTOWN): Percentage of shares held by institutional shareholders. Family Ownership (FAMOWN): Percentage of shares held by family shareholders. Blockholders Ownership (BLOCKOWN): Percentage of shares held by individual shareholders who own more than 5% of the total shares of the firm. Firm Size (FSZ): Measure as the natural logarithm of the total assets of the firm. Leverage (LEV): Measure as the book value of total debt scaled by total assets. Profitability (ROA): Measure as the ratio of net income to total assets. Audit Quality (BIG4): The dummy variable that takes the value of 1 if the firms employ one of the big 4 audit firms in the time t to perform their audit services or zero otherwise. Loss (LOSS): The dummy variable that takes the value of 1 if the firm reports losses or zero otherwise.

As presented in table 5.2, Board size BRDSIZE ranges from a minimum of 0 (i.e., firms have no board members) to a maximum of 13, with a mean of 8.11 board members. These statistics are in line with the findings of prior studies relating to the distribution of corporate board size (Al-Bassam et al., 2015; Sarhan & Ntim, 2018; Haniffa & Hudaib, 2006). For example, Al-Bassam et al. (2015) report an average board size of 8 members for a sample of Saudi listed firms. In addition, the Saudi corporate governance code recommends that board size should not be less than 3 and not exceed 11 members. The average board size of 8.11 board members indicates that most of the Saudi firms in the sample have complied with this requirement.

Table 5.2 indicates that Saudi boards meet (BRDMEET) on average five times per year (mean 5.08). Whereas The audit committee, AUDMEET, meets, on average, four times per year (mean 4.71). These statistics suggest that the Saudi firms comply with the recommended benchmark drawn from the Saudi Corporate Governance Code (2017), which recommended that the board of directors and audit committee should meet at least 4 times during the year. However, the frequency of the board and audit committee meetings in Saudi firms is low compared to the mean values reported by prior studies (Alzoubi, 2016; Katmon & Farooque, 2017). For example, Katmon & Farooque (2017) reported that the Audit Committee of UK listed firms meets on average 9 times per year, whereas the board meets on average 8 times per year.

Table 5.2 indicates that the INTERLOCK variable ranges from a minimum of 0 to a maximum of 1, and on average, half of the directors on Saudi firms, 0.54 (54%), hold directorship positions in other listed firms. A similar figure is reported by Hashim & Abdul Rahman (2006). They found that, on average, 54% of board members in Malaysian listed firms hold additional directorships in other firms. However, the mean of board members (54%) who hold directorship positions in other listed firms, which is reported in this study, is higher than the one reported by Fich (2005). Fich (2005) reported that, on average, 34% of the board members in US firms held a CEO position in other firms.

Table 5.2 demonstrates that the ratio of family members on the board of Saudi firms (FAMMB) ranges from 0 to 1, with an average of 0.22. This figure suggests that, on average, Saudi firms' boards are dominated by family members. In line with this figure, Jaggi & Leung (2007) reported that, on average, 18.34% of the board members in Hong Kong firms were family members.

Regarding ownership structure, it can be seen from Table 5.2 that Government ownership (GOVOWN) holds on average 7.46% of total outstanding shares of the sample firms, whereas institutional investors (INSTOWN), on average, hold 10.18% of total outstanding shares. However, the level of institutional ownership in Saudi firms is lower than the level of institutional ownership reported by other studies such as Alzoubi (2016) and Koh (2003). For example, Koh (2003) documented that institutional investors held on average 47.13% of the shares of Australian firms. Likewise, Alzoubi (2016) found in Jordanian firms that Institutional investors held on average 19% of the outstanding shares. Blockholders' ownership (BLOCKOWN) has a mean of 1.65%, suggesting a low proportion of shares held by blockholders in Saudi firms. Similar to this figure, Alzoubi (2016) reports that the level of blockholders' ownership was the lowest in Jordanian companies, in which, on average, they hold 6.9% of the total outstanding shares. Finally, family ownership (FAMOWN) ranges from a minimum of 0% to a maximum of 70%, with a mean of 13.73%. This data provides evidence suggesting that family ownership is the highest among other ownership types, suggesting that most Saudi firms have family investors. However, it is expected that Saudi firms would have a high level of family ownership, as family is a central pillar of Saudi society. Since, the Strong social ties between families and tribes are also a feature of Saudi society (Al-Bassam et al., 2015; Hussainey & Al-Nodel, 2008). Similar to the figure of family ownership in Saudi firms, Alzoubi (2016) reported that family ownership was higher than other ownership types in Jordanian companies. Alzoubi (2016) documented that family ownership held an average of 45.2% of the outstanding shares. The high level of family ownership was also documented by Jaggi et al.'s (2009) study, in which they reported that, on average, 19.6% of the outstanding shares of Hong Kong firms were owned by family shareholders.

Regarding earnings management, variable EMJ Table 5.2 reveals that the average value of EMJ is almost 4.6% of total assets, indicating that Saudi firms did some earnings manipulation. A similar low value of earnings management was reported by prior studies (Abbadi et al., 2016; Jiang et al., 2008). For example, in Jordan, Abbadi et al. (2016) found that the mean of EM was 9.66% of total assets; however, in the US, Jiang et al. (2008) found that the magnitude of EM was 5.47% of total assets.

In terms of the control variables, table 5.2 demonstrates that the natural logarithm of total assets (firm size) is 15.45, and the sample firms are profitable in the period analysed with a mean ROA of 0.06. Moreover, Saudi firms seem to use external funding to finance, on average, 21% of their total assets. In addition, almost 57% of the Saudi firms employed one

of the BIG4 accounting firms, implying high Audit quality. However, 16% of the Saudi firms reported losses (LOSS) during the years 2006-2017.

5.4 Descriptive Statistics of Additional Governance Variables

Table 5.3 presents the summary of descriptive statistics related to additional governance variables of this study. Table 5.3 reveals that Strict Audit independent directors (STRAUDIND) range from a minimum of 0 to a maximum of 1, with the average Saudi firm having about 0.18 (18%) of their Audit committee members being strict independent directors. This figure indicates that less than one-fifth of independent directors in the Audit committee in Saudi firms have passed all the 11 joint independence criteria. However, Table 5.3 indicates that Saudi firms declared on average 0.43 (43%) of non-strict independent directors on their audit committee (AUDIND). As demonstrated in Table 5.3, this figure decreases to 18% when considering strictly independent directors over Audit committee size. This evidence indicates that the majority of the independent directors on the audit committee are not truly independent as they do not comply with at least one of the 11 independence criteria recommended by SCGC. The figure of AUDITDUM supports this finding, as it indicates that only 30% of the Saudi firms in the study sample have an audit committee comprised merely of strict independent directors that meet all the 11 independence criteria recommended by SCGC.

The figures of strict and non-strict independent directors of the audit committee are consistent with Crespí-Cladera & Pascual-Fuster's (2014) study. Crespí-Cladera & Pascual-Fuster (2014) reported that on average, about half of Audit committee members (49.4%) in Spanish firms were non-strict independent directors. However, this figure decreased to 21.2% after considering strict independent directors who passed all the 8 independence criteria in their study.

Table 5.3: Descriptive statistics of additional governance variables

Additional Governance Variables	Mean	STD	Min	Max
STRAUDIND	0.18	0.269	0	1
AUDIND	0.43	0.309	0	1
BRDIND	0.49	0217	0	1
INDINDEX	8.54	2.648	0	11
BRDINDUM	0.22	0.411	0	1
AUDITDUM	0.30	0.457	0	1
CHAIRFAMMB	0.50	0.500	0	1
CHAIRCONTROLER	0.45	0.498	0	1

Notes: Variables are defined as follows: strict Audit committee independent directors (STRAUDIND): the proportion of strict independent directors who meet all the independence criteria recommended by the 2017 SCGC to total audit committee members. Non-strict Audit committee independent directors (AUDIND): measured by the proportion of independent directors declared by the firms in their annual reports as independent directors to total audit committee members. Non-strict board independent directors (BRDIND): measured as the proportion of independent directors declared by the firms in their annual reports as independent directors to total board members. Strict Board of directors' independence index (INDINDEX): a disclosure independence index constructed for the independent directors on the board based on the 11 independence criteria recommended by the 2017 Saudi Corporate Governance Code. A value of 1 is assigned if the independent member meets one of the 11 independence criteria and 0 otherwise. The index score ranges from 1 to 11. (BRDINDUM) a dummy variable that takes the value of 1 if all the independent directors on the board meet all the 11 independence criteria recommended by the 2017 Saudi Corporate Governance Code and 0 otherwise. AUDITDUM: a dummy variable that takes the value of 1 if all the independent directors on the audit committee meet all the 11 independence criteria recommended by the 2017 Saudi Corporate Governance Code and 0 otherwise. CHAIRFAMMB: a dummy variable that takes the value of 1 if the chairman of the board of directors is a family member and 0 otherwise. CHAIRCONTROLER: a dummy variable that takes the value of 1 if the chairman of the board of directors is a controlling shareholder who owns 5% or more of the shares of the Company.

Table 5.3 demonstrates that the aggregate mean scores of strict independence index INDINDEX range from a minimum of 0 to a maximum of 11, with the average Saudi firm complying with 8.54 (77.64%) independent criteria out of 11. This figure indicates that the majority of the Saudi firms have independent directors on their board who are not strictly independent, in which they violate at least one of the independence criteria recommended by 2017 SCGC. This means that, in principle, the independent directors might be classified by the firm as independent directors; however, in practice, these independent directors might not be genuinely independent since they violate at least one or more of the independence criteria recommended by the Saudi corporate governance code. In line with this result, the figure of BRDINDUM demonstrates that only 22% of the Saudi firms in the sample of the study comply with all 11 independence criteria recommended by SCGC. This indicates that only about one-fifth of the Saudi firms have a board that is composed entirely of strict independent directors who pass all 11 independence criteria recommended by SCGC.

Furthermore, Table 5.3 reveals that half of the Saudi firms (50%) have a chairman position occupied by a family member (CHAIRFAMMB). Additionally, about 45% of the Saudi firms have a chairman who is a controlling shareholder holding more than 5% of the firm's shares (CHAIRCONTROLER). These figures are expected for Saudi firms, as family ownership is concentrated in Saudi firms.

5.5 Descriptive Statistics of the 11 Individual Independence Criteria Recommended by the 2017 SCGC

This study investigates the levels of compliance among the sampled companies with the individual independence criteria that constitute the strict board independence index (INDINDEX) and strict audit independence index (AUDINDEX). Table 5.4 reports the percentage levels of Saudi companies that comply with each of the individual independence criteria that constitute INDINDEX and AUDINDEX for the pooled sample.

Regarding compliance with the individual independence criteria that constitute INDINDEX, Table 5.4 shows that each individual independence criterion has a range between0(0%) and 1(100%). An independence criterion that reported 100% indicates perfect compliance by all 112 Saudi firms. In contrast, an independence criterion that reported 0% indicates that none of the sampled firms complied with this independence criterion during the study period.

Table 5.4 shows that all the 11 independence criteria provisions have relatively high levels of compliance (60% or more). This indicates that about two-thirds of the sampled firms have at least one independent director on the board of directors/audit committee who meets at least one or more than one of the independence criteria recommended by SCGC. Nonetheless, it can be seen from table 5.4 that Saudi firms are relatively less compliant with the independence criteria related to the independent directors on the audit committee than with the independence criteria related to the independent directors on the board of directors. For example, regarding compliance with the individual independence criteria that constitute the INDINDEX, table 5.4 illustrates that 86% of the Saudi firms show high compliance with the independence criterion that states that independent directors should not hold more than 5% of the firm’s equity. Likewise, the majority of the sample firms (89%) have at least one independent director on their board whose remuneration does not exceed SAR 200,000. Additionally, 89% of the sample firms have at least one independent director on their board who does not hold a Board member position in any company within the group of the

Company for which he/she is nominated to be a Board member. However, the overwhelming majority of sample firms (93%) have at least one independent director on their board who has not been an employee of the company during the preceding two years. Also, about 70% of the Saudi firms have at least one independent director who is not related to controlling shareholders or to any other directors on the board. In contrast, Saudi firms show relatively low compliance with the following independence criteria: the independent directors do not represent a legal person that holds 5% of the firms' equity; they are not related to any senior executive of the company; they have no direct or indirect interest in the contracts executed for the company's account; and they do not engage in a business where they compete with the Company or conduct business in any of the company's activities. Only just over two-thirds of Saudi firms comply with these aforementioned independence criteria.

Table 5.4: Descriptive statistics relating to the level of compliance with the individual independence criteria recommended by 2017 SCGC for the pooled sample (all 994 firms' years.

Strict board of directors independence index INDINDEX			Strict audit committee independence index AUDINDEX			
Independence Criteria for independent directors %	**Mean**	**STD**	**Mean**	**STD**	**Min**	**Max**
1) The independent directors do not hold 5% or more of the shares of the company.	0.86	0.411	0.75	0.435	0	1
2) The independent directors are not related to anyone who owns 5% or more of the shares of the company.	0.76	0.345	0.71	0.452	0	1
3) The independent directors do not represent a legal person that holds 5% or more of the shares of the company.	0.64	0.481	0.57	0.495	0	1
4) The independent directors are not related to any member of the board of the company.	0.72	0.450	0.69	0.461	0	1
5) The independent directors are not related to any senior executive of the company.	0.66	0.474	0.61	0.488	0	1
6) The independent directors are not board members of any company within the group of the company on whose board they serve.	0.89	0.315	0.76	0.424	0	1
7) The independent directors are not, and have not been during the preceding two years, employees of the company or of any party dealing with the company.	0.93	0.261	0.79	0.408	0	1
8) The independent directors have no direct or indirect interest in the contracts executed for the company's account.	0.65	0.478	0.61	0.487	0	1
9) The independent directors' remuneration does not exceed SAR 200,000 or 50% of their remuneration of the last year for the membership of the board or any of its committees, whichever is less.	0.89	0.311	0.75	0.431	0	1
10) The independent directors do not engage in a business where they compete with the company or conduct business in any of the company's activities.	0.68	0.466	0.70	0.461	0	1
11) The independent directors have not served for more than nine years, consecutive or inconsecutive, as board members of the company.	0.86	0.344	0.76	0.428	0	1

Regarding compliance with the individual independence criteria that constitute AUDINDEX, it can be seen from table 5.4 that Saudi firms are relatively less compliant with

the independence criteria related to the independent directors on the audit committee than with the independence criteria related to the independent directors on the board. For example, about 70% of the Saudi firms in the study sample comply with the following eight independence criteria: they do not hold 5% or more of the shares of the company; they are not related to controlling shareholders or to any other directors on the board; they have not served for more than nine years as board members in the company; they are not board members of any company within the group of the company on whose board they serve; they have not been employees of the company within the past two years; their remuneration does not exceed SAR 200,000; and they do not engage in a business where they compete with the company or conduct business in any of the company's activities. For the remaining three independence criteria, around two-thirds of the Saudi firms comply with the following: independent directors do not represent a legal person that holds 5% or more of the shares of the company; they are not related to any senior executive of the company; and they have no direct or indirect interest in the contracts executed for the company's account.

Finally, it can be seen from table 5.4 that Saudi firms have relatively high compliance with all 11 individual independence criteria related to independent directors on both the board of directors and the audit committee. This could be attributed to the fact that these independence criteria have been in place since 2006, as they were recommended by the Saudi corporate governance code in 2006.

5.6 Testing OLS Assumptions for the Compliance-Index Model and the Equilibrium-Variable Model

The following sections examine the OLS assumptions, namely normality, linearity, multicollinearity, heteroskedasticity and autocorrelation, to determine whether the OLS regression is an appropriate estimation method for the main analysis of the study.

5.6.1 Normality

Testing for normality is essential for OLS regression and the parametric test (Field, 2013). In order to perform a parametric test, data are required to be normally distributed. The assumption of normality is also required for performing OLS regression (Field, 2013). This study examines the normality of the data by examining the skewness and kurtosis of the data, as well as the Shapiro-Wilk test for normal data. The study examines the normality test for all the continuous variables of the Compliance-Index Model and equilibrium-variable model except for the dummy variables, which are BIG4 and LOSS, because they are not equivalent for the normality test. In order to test whether the non-normality found in the variables data is significantly different from a normal distribution, the skewness and kurtosis are used to measure the shape of the distribution, and the Shapiro-Wilk test measures whether the data differ significantly from a normal distribution (Field & Field, 2018).

Regarding the skewness and kurtosis test, the deviation of the normality might occur in two main ways, which are (1) lack of symmetry (skew) or (2) pointiness (kurtosis) (Field & Field, 2018). First, skewness is a measure of the asymmetry of the distribution of the data around their mean (Brooks, 2019). In addition, skewness means that the distribution of the data is not sympatric, and the most frequent observation of the data is clustered at one end of the scale (Field & Field, 2018). The skewed distribution has two shapes, positive skewed and negative skewed (Field & Field, 2018). Positive skewness occurs when the data are clustered on the end of the left tail. Additionally, the tail of the distribution on the right side is taller than on the left side. This is due to the mean of the data being larger than the median (Brooks, 2019). By contrast, negative skewness occurs when the data are clustered on the end of the right tail, and the tail of the distribution on the left side is taller than on the right side. This is due to the mean of the data being smaller than the median (Brooks, 2019).

Second, kurtosis measures the extent to which the data are clustered on both tails of the distribution (Field & Field, 2018). In other words, kurtosis measures the fatter of the tails of the distribution (Brooks, 2019). Kurtosis also has two distribution shapes: Leptokurtic and Platykurtic. However, if the data have a normal distribution, kurtosis should take the value of 3 (Gujarati, 2003). Therefore, if the kurtosis value is more than 3, the Leptokurtic distribution occurs because more data points fall in the tails, and the shape of the distribution tends to be pointy (Gujarati, 2003; Field & Field, 2018). This is also known as heavy-tailed distribution (Field & Field, 2018). If the kurtosis value is less than 3, the Platykurtic distribution occurs because fewer data points fall in the tails (a thin tail) and the shape of the

distribution tends to be flatter than normal (Field & Field, 2018; Gujarati, 2003). Third: the Shapiro-Wilk test examines the normality by comparing the data on the sample to normally distributed data that have the same mean and standard deviation as the sample data (Field & Field, 2018). The test sets a null hypothesis which states that the data are normally distributed. If the test is not significant where the p-value is larger than 1%, 5% and 10%, this indicates that the distribution of the sample does not deviate significantly from the normal distribution (the data are normally distributed). However, if the test is significant where the p-value is less than 1%, 5% and 10%, then the data distribution is significantly different from a normal distribution (is not normal).

As discussed above in the Normality section, the data considered have a normal distribution shape if the value of the Skewness is 0 (Field & Field, 2018). A positive value indicates that the data are positively skewed, and a negative value indicates that the data are negatively skewed. For the Kurtosis test, a value larger than 3 indicates a fat tail; a Leptokurtic and Kurtosis value less than 3 indicates a thin tail (platykurtic).

Table 5.5Skewness/Kurtosis tests for the compliance-index model

Variables	Skewness	Pr (Skewness)	Kurtosis	Pr (Kurtosis)
EMJ	2.992057	0.0000***	19.43694	0.0000***
SCGI	-1.346503	0.0000***	5.359349	0.0000***
ROA	-21.34147	0.0000***	583.3383	0.0000***
LEV	0.477966	0.0000***	2.059424	0.0000***
FSZ	0.523499	0.0000***	3.987189	0.0000***

Significant at: * 0.10, * * at 0.05 and * * * 0.01 per cent levels, respectively

Table 5.5 indicates that all the compliance model data suffer from a non-normality problem. For example, EMJ data seems not to be symmetrically distributed around the mean because the Skewness value is 2.992057, which is higher than 0. The probability of the value is significant, which confirms the non-normality of the data. In addition, the Skewness values for LEV and FSZ are 0.477966, 0.523499 receptively, and they are significant at 1%. These values indicate that the data of these variables are positively skewed. Nonetheless, the skewness is not large because the Skewness values of these variables are close to zero. The distribution of the ROA is extremely skewed towards the left side. This appears from the

large value of Skewness (-21.34147). Additionally, the Skewness value is significant at 1%, which indicates that distribution deviates significantly from the normal distribution. Similar to ROA, the distribution of SCGI data has been negatively skewed, which appears from the negative Skewness value of -1.346503. The value is quite high, since it is around 1 and far away from zero. This deviation from the normal distribution is significant at 1%, which indicates a significant deviation of SCGI data from the normal distribution

In terms of kurtosis, Table 5.5 demonstrates that the values of all the variables (except for LEV) are more than 3. This indicates that the data have a heavy-tailed distribution, which means that more data points fall at the end of each tail, and the shape of the distribution is pointy. For example, EMJ has a heavy-tailed (Leptokurtic) distribution, which means that a lot of the data are clustered in the tail. The Kurtosis value (19.43694) is significantly different from the normal distribution at 1% level of significance. However, the value of kurtosis for LEV is 2.059424, which is less than 3. This indicates that the data distribution has a thin tail and tends to be flatter than normal. As demonstrated in Table 5.5, the kurtosis values for all the variables in the Compliance-Index Model are significant at 1%, which means that the distribution of these variables is significantly not normal. As a consequence, all the variables in the compliance model significantly deviate from the normal distribution shape.

Table 5.6 Shapiro-Wilk W test for the Compliance-Index Model

Variables	W	V	Z	Prob>z
EMJ	0.745	159.904	12.564	0.00000***
SCGI	0.896	65.026	10.336	0.00000***
ROA	0.283	450.369	15.128	0.00000***
LEV	0.949	31.968	8.578	0.00000***
FSZ	0.973	17.053	7.022	0.00000***

Significant at: * 0.10, * * 0.05 and * * * 0.01 per cent levels, respectively

As seen in Table 5.6, all the variables of the Compliance-Index model in the Shapiro-Wilk W test are significant at a 1% level of significance. This indicates rejecting the null hypothesis, which states that the data of these variables is normal. Hence, the results of the Shapiro-Wilk W test and Skewness/Kurtosis test confirm that none of the data of the variables in the Compliance-Index Model has a normal distribution shape.

Furthermore, this study examined the normality of the data of the variables in the equilibrium-variable model by using the skewness and kurtosis test and the Shapiro-Wilk test for normal data. Table5.7 indicates that all of the variables in the equilibrium-variable model suffer from normality problems. For instance, BRDMEET, GOVOWN, INSTOWN and FAMOWN data seem to be asymmetrically distributed around the mean, because the Skewness value of these variables is higher than 0 and significant at 1%, which confirms the non-normality of the data. In addition, the Skewness values for STRIND, AUDMEET, and FAMMB are 0.8181684, 0.5065971 and 0.6422227 respectively, and they are significant at 1%. These values indicate that the data of these variables are positively skewed. Nonetheless, the skewness is not large, because the Skewness values of these variables are close to zero.

Table 5.7 Skewness/Kurtosis tests for the equilibrium-variable model

Variables	Skewness	Pr(Skewness)	Kurtosis	Pr(Kurtosis)
STRIND	0.8181684	0.0000***	2.785882	0.1489
AUDINDEX	-1.14953	0.0000***	2.631325	0.0046
BRDSIZE	-0.9144822	0.0000***	6.35257	0.0000***
BRDMEET	1.428324	0.0000***	7.91177	0.0000***
AUDMEET	0.5065971	0.0000***	4.57999	0.0000***
INTERLOCK	-0.2614251	0.0000***	2.174764	0.0000***
FAMMB	0.6422227	0.0000***	2.848191	0.3408
GOVOWN	2.557987	0.0000***	9.186735	0.0000***
INSTOWN	1.618677	0.0000***	4.387224	0.0000***
FAMOWN	1.398063	0.0000***	3.833829	0.0001
BLOCKOWN	5.69379	0.0000***	48.3999	0.0000***

Significant at: * 0.10, * * 0.05 and * * * 0.01 per cent levels, respectively

Table 5.7 indicates that the distribution of the BLOCKOWN is extremely skewed towards the right side. This appears from the large value of Skewness (5.69379), which is higher than 0. Additionally, the Skewness value of BLOCKOWN is significant at 1%, which indicates that the distribution of the BLOCKOWN data deviates significantly from the normal distribution. Unlike BLOCKOWN, the distributions of AUDINDEX, BRDSIZE and INTERLOCK data are negatively skewed. The Skewness value of these variables is significant at 1%. This indicates a significant deviation of the data from the normal distribution shape.

In terms of kurtosis, Table 5.7 demonstrates that the values of BRDSIZE, BRDMEET, AUDMEET, GOVOWN, INSTOWN and BLOCKOWN variables are more than 3. This indicates that the data in these variables have a heavy-tailed distribution, which means that more data points fall at the end of each tail, and the shape of the distribution is pointy. However, the kurtosis values for FAMMB and STRIND are 2.785882 and 2.848191, respectively, which are less than 3 but are not significant. This indicates that the data distribution has a normal shape around the tail in these variables. In addition, the kurtosis values for the remaining variables in Table 5.7 are significant at 1%, which means that the distribution of these variables is significantly not normal.

Table 5.8Shapiro-Wilk W test for the equilibrium-variable model

Variables	W	V	Z	Prob>z
STRIND	0.97959	12.803	6.312	0.0000***
AUDINDEX	0.81267	117.498	11.801	0.0000***
BRDSIZE	0.94865	32.209	8.597	0.0000***
BRDMEET	0.91812	51.358	9.752	0.0000***
AUDMEET	0.96934	19.232	7.320	0.0000***
INTERLOCK	0.99061	5.888	4.390	0.00001***
FAMMB	0.98304	10.636	5.853	0.0000***
GOVOWN	0.82786	107.971	11.591	0.0000***
INSTOWN	0.89174	67.906	10.443	0.0000***
FAMOWN	0.91403	53.926	9.873	0.0000***
BLOCKOWN	0.73919	163.589	12.620	0.0000***

Significant at: * 0.10, * * 0.05 and * * * 0.01 per cent levels, respectively

Finally, the result of the Shapiro-Wilk W test for normal data in Table 5.8 confirmed the Skewness/Kurtosis tests for Normality, the test at 1% level of significance, which indicates rejecting the null hypothesis, which states that the data is normal. Therefore, the results of the two tests confirmed that none of the independent variables in the equilibrium-variable model has a normal distribution shape.

In order to mitigate the issue of the non-normalities in the variables of the study, all continuous variables are winsorised up to the 5th and beyond the 95th percentiles, following Elshandidy et al. (2015), Wang & Hussainey (2013), Setia-Atmaja et al. (2011), and Saona et al. (2020). This, in turn, mitigates the effect of the outliers on the data (Field & Field, 2018), since the presence of the outliers could be the reason for the non-normality of the data

(Field & Field, 2018). Field and Field (2018) state that outliers can skew the distribution of data, and this might bias the mean and increase the standard deviation of the data (Field & Field, 2018). However, it is worth mentioning that the effect of the non-normality on the data will not be severe in this study, since the sample size is sufficiently large (994 firm-year observations). Brooks (2019) indicates that violating the normality assumption might be acceptable in a large sample size. According to the law of large numbers, the average of the random variables in a large sample size will converge to the population mean (Brooks, 2019).

5.6.2 Linearity

Linearity is an important assumption in OLS regression; it means that the relationship between the independent variables (X) and the mean of the dependent variable (Y) should be linear (Gujarati, 2003). Following Al-Bassam et al. (2015) and Ntim et al. (2012), the study used Cook's distance tests to check the linearity of the variables of the Compliance-Index model and the equilibrium-variable model. If the Cook's distance value is greater than 1, this indicates that a non-linearity relationship exists between the dependent and independent variable (Field & Field, 2018).

Table 5.9: the minimum and the maximum values of the Cook's distance test for the Compliance-Index Model and the equilibrium-variable model.

Cook's distance		
	Min	**Max**
The Compliance-Index Model	0.013	0.070
The equilibrium-variable model	0.002	0.079

Table 5.9 presents the Cook's distance values for the Compliance-Index Model and the equilibrium-variable model. The Cook's distance values for the Compliance-Index Model are between 0.013 (minimum value) and 0.070 (maximum value). The Cook's distance values for the equilibrium-variable model are between 0.002 (minimum value) and 0.079 (maximum value). Hence, the Cook's distance values do not exceed the 1 threshold. This indicates that there is a linear relationship between the variables in the Compliance-Index Model and the equilibrium-variable model (Field & Field, 2018).

5.6.3 Multicollinearity

The study used the Pearson correlations matrix and variance inflation factor (VIF) test to check for the multicollinearity problem in the Compliance-Index Model and the equilibrium-variable model. Regarding the Compliance-Index Model, the study used the correlations matrix to examine the direction and the magnitude of the linear relationship between the dependent, independent and control variables of the Compliance-Index Model. Such a test helps to spot any potential multicollinearity problem between the variables. The Pearson correlations between the variables in the Compliance-Index Model is reported in Table 5.10. Table 5.10 indicates that there are significant correlations between some of the variables; however, none of these correlations is so high as to present significant multicollinearity problems, since Gujarati (2003) stated that if the correlation coefficient between the independent variables is > 0.90, this is considered a multicollinearity problem.

Table 5.10: Pearson correlations matrix of all variables in the Compliance-Index Model.

Variables	EMJ	SCGI	FSZ	LEV	ROA	BIG4	LOSS
EMJ	1						
SCGI	-0.0862***	1					
FSZ	-0.1778***	0.1297 ***	1				
LEV	0.0679**	0.0525*	0.5130***	1			
ROA	-0.0896***	-0.1495***	0.0679**	-0.3194***	1		
BIG4	-0.0008	0.0199	0.3913***	0.2871***	0.1124***	1	
LOSS	0.1362***	0.0777**	-0.1374***	0.0979***	-0.5843***	-0.1182***	1

*** p<0.01, ** p<0.05, * p<0.1

Table 5.10 demonstrates that most of the correlation coefficients between the variables are smaller than 60%, suggesting that multicollinearity does not appear to be a problem in the Compliance-Index Model. Concerning the correlations between the variables, Table 5.10 indicates that there is a negative relationship between the SCGI and EMJ, and this is significant at 1% level. This indicates that firms with high compliance with the provisions of SCGI are less involved in earnings management practices. Furthermore, the Pearson correlations present a positive correlation between firm size (FSZ) and SCGI, and this correlation is significant at 1% level of significance. This indicates that as the firm size increases, the firm tends to comply more with the Saudi corporate governance code. Additionally, there is a modest negative correlation (-0.319) between return on assets (ROA) and leverage (LEV). This is understandable, as when the firm becomes profitable, it depends less on debt for financing. Likewise, the negative correlation (-0.584) between ROA and LOSS indicates that firms are less likely to report a loss when the firm's return on assets increases. Finally, a positive correlation between firm size (FSZ) and BIG4 indicates that large firms tend to employ one of the big 4 accounting firms to perform their audit.

Table 5.11: Variance Inflation Factor (VIF) for independent variables in the compliance index model.

Variables	VIF	1/VIF
FSZ	1.593	0.628
LEV	1.456	0.687
BIG4	1.211	0.826
LOSS	1.181	0.847
ROA	1.161	0.861
SCGI	1.037	0.964
Mean VIF	1.273	.

Furthermore, this study executed the variance inflation factor (VIF) test to check for the multicollinearity between the variables of the Compliance-Index Model. The results in Table 5.11 asserted that none of the VIFs exceeds the 10 threshold at which multicollinearity may be a problem (Gujarati, 2003). Hence, the Pearson correlations and (VIF) test results confirm that multicollinearity does not appear to be a problem in the Compliance-Index Model

In order to check the multicollinearity issue for the equilibrium-variable model, Table 5.12 presents the Pearson correlation for all dependent, independent and control variables of the equilibrium-variable model. It is apparent from Table 5.12 that the correlations among all the variables are fairly low, since most of the correlation coefficients are below 63%. This indicates that there is no serious multicollinearity problem in the equilibrium-variable model. As mentioned above, the multicollinearity problem occurs when the correlation coefficient exceeds 0.90 (Gujarati, 2003). A closer inspection of Table5.12 reveals that the maximum correlation coefficient is recorded at 62%, which is between FAMMB and FAMOWN. This is expected, since firms with a high level of family ownership are more likely to have more family members on their board. Additionally, Table 5.12 indicates that the dependent variable EMJ is significantly related to some of the independent variables and most of the control variables in the equilibrium-variable model. For example, regarding the board of director characteristics, EMJ is negatively related to STRIND, BRDSIZE, BRDMEET, AUDMEET and INTERLOCK. This indicates that firms with a high proportion of strict independent directors and directors with multiple directorships have larger board sizes, their board and audit committee meet more often, and such firms are involved less in earnings management practices. Regarding ownership variables, Table 5.12 reveals that EMJ is negatively related to GOVOWN and INSTOWN, which indicates that firms with a high level of government and institutional ownership involve less earnings management practices.

Table 5.12: Pearson correlations matrix of all variables in the equilibrium-variable model

Variables	EMJ	STRIND	AUDINDEX	BRDSIZE	BRDMEET	AUDMEET	INTERLOCK	FAMMB	GOVOWN	INSTOWN	FAMOWN	BLOKOW	FSZ	LEV	ROA	BIG4	LOSS
EMJ	1																
STRIND	-0.074**	1															
AUDINDEX	-0.037	0.309***	1														
BRDSIZE	-0.213***	0.04	-0.011	1													
BRDMEET	0.019***	-0.029	0.133***	-0.02	1												
AUDMEET	-0.078**	0.068**	0.267***	0.125***	0.242***	1											
INTERLOCK	-0.096**	0.01	0.096**	0.258***	-0.015	0.218***	1										
FAMMB	0.047	-0.091**	-0.070**	0.018	-0.043	-0.019	0.075**	1									
GOVOWN	-0.139***	0.014	-0.008	0.168***	0.220***	0.105***	0.069**	-0.303***	1								
INSTOWN	-0.088**	-0.053*	0.046	0.126***	0.024	0.006	0.163***	-0.330***	-0.051	1							
FAMOWN	0.014	-0.062**	-0.092**	-0.006	-0.123***	-0.032	0.123***	0.621***	-0.271***	-0.194***	1						
BLOKOW	-0.001	-0.101**	0.026	0.013	-0.108***	0.049	-0.006	-0.043	-0.144***	-0.033	-0.015	1					
FSZ	-0.178***	-0.004	-0.033	0.466***	0.021	0.055*	0.396***	-0.092**	0.349***	0.302***	-0.021	-0.122***	1				
LEV	0.068**	-0.048	-0.038	0.086**	-0.051	0.014	0.271***	0.028	-0.058*	0.171***	0.034	0.104**	0.513***	1			
ROA	-0.090**	-0.061*	-0.038	0.142***	-0.055*	-0.076**	-0.001	0.132***	0.201***	0.042	0.137***	-0.044	0.068**	-0.319***	1		
BIG4	-0.001	-0.089**	-0.056*	0.240***	-0.003	0.036	0.228***	0.038	0.152***	0.257***	0.167***	0.075**	0.391***	0.287***	0.112***	1	
LOSS	0.136***	0.055*	0.024	-0.154***	0.108***	0.011	-0.023	-0.111***	-0.026	-0.003	-0.164***	0.01	-0.137***	0.098**	-0.584***	-0.118***	1

*** p<0.01, ** p<0.05, * p<0.1

Table 5.13: Variance Inflation Factor (VIF) for independent variables in the equilibrium-variable model

Variables	VIF	1/VIF
FSZ	2.71	0.369
FAMMB	2.019	0.495
ROA	1.999	0.5
LEV	1.961	0.51
FAMOWN	1.807	0.553
GOVOWN	1.776	0.563
LOSS	1.634	0.612
INSTOWN	1.517	0.659
BRDSIZE	1.424	0.702
BIG4	1.382	0.724
INTERLOCK	1.324	0.755
AUDINDEX	1.229	0.814
AUDMEET	1.226	0.816
BRDMEET	1.18	0.848
STRIND	1.163	0.86
BLOCKOWN	1.145	0.874
Mean VIF	1.593	.

In addition, this study executed the variance inflation factor (VIF) test to check for the multicollinearity between the variables of the equilibrium-variable model. The VIF test in Table 5.13 indicates that no value is greater than 10, which confirm the non-multicollinearity in the equilibrium-variable model. Hence, the results of the Pearson correlations and (VIF) test confirm that multicollinearity does not appear to be a problem in the equilibrium-variable model.

5.6.4 Heteroscedasticity

It has been assumed in the OLS model that the variance of the error term should be constant, which refers to the assumption of Homoscedasticity (Brooks, 2008). In contrast, if the error term exhibits inconstant variance, it indicates the presence of Heteroscedasticity in the model (Brooks, 2008). Field and Field (2018) state that Heteroscedasticity occurs when the residuals have inconstant variance at each point of the independent variables. The consequence of having Heteroscedasticity in the model is that it will bias the standard error of the estimates (Brooks, 2008). This, in turn, will bias the statistics tests and the confidence intervals of the coefficients and lead to misleading interference. However, the presence of Heteroscedasticity will not affect OLS estimators. They will still produce unbiased and consistent coefficient estimates (Brooks, 2008). The study has inspected Heteroscedasticity in both the compliance-index and the equilibrium-variable model by performing the Breusch-Pagan test, as suggested by Cooke (1998) and Heij et al. (2004). The null hypothesis of this test states that the error term in both models has constant variance (Homoscedasticity).

Table 5.14: Breusch-Pagan / Cook-Weisberg test for Heteroscedasticity in the Compliance-Index Model and the equilibrium-variable model

	The Compliance-Index Model	**The Equilibrium-variable model**
Chi2(1) =	43.19	49.26
Prob> chi2 =	0.0000***	0.0000***
Ho: Constant variance		
Variables: fitted values of EMJ		

*** p<0.01, ** p<0.05, * p<0.1

It appears from Table 5.14 that the p-value is highly significant at the 1% level in both the compliance-index and the equilibrium-variable model. Therefore, the null hypothesis is rejected, implying that the compliance-Index and the equilibrium-variable model suffer from the Heteroscedasticity problem (Gujarati, 2003).

5.6.5 Independent Errors (Autocorrelation)

In order to run OLS regression, the error terms of the regression should be uncorrelated (Field & Field, 2018). In other words, the covariance between the error terms of the regression should be zero (Brooks, 2008). However, Autocorrelation occurs in the regression model when the residuals of the two observations are correlated (Field & Field, 2018). Similar to the Heteroscedasticity issue, the presence of Autocorrelation in the OLS model will not bias the coefficient estimates of the OLS, but they will become inefficient, in which case the statistical significance of the coefficient regression will be misleading (Brooks, 2008). Therefore, an incorrect inference might be drawn as to whether a certain independent variable acts as a real determinant of the variation of dependent variables in the regression model (Brooks, 2008). This study ran several tests to check for Autocorrelation, the Breusch-Godfrey LM test and the Durbin-Watson test, as suggested by Field and Field (2018).

Table 5.15: Durbin-Watson test for Autocorrelation in the Compliance-Index Model and the equilibrium-variable model

	Lags (p)	chi2	Df	Prob > chi2
The Compliance-Index Model	1	18.027	1	0.0000***
The Equilibrium-variable model	1	10.821	1	0.001***
H0: no serial correlation				

*** p<0.01, ** p<0.05, * p<0.1

The Durbin–Watson test is used to test the relationship between the error term of the regression and its lagged value (Gujarati, 2003). Therefore, the null hypothesis of the Durbin-Watson test implies that the error terms at the time t-1 and t are uncorrelated with each other. Table 5.15 presents the results of the Durbin-Watson test for the Compliance-Index Model and equilibrium-variable model. As demonstrated in Table 5.15, the Chi2 values for the Compliance-Index Model and equilibrium-variable model are 18.027 and 10.821, respectively. These Chi2 values are high and significant at 1%, indicating the rejection of the null hypothesis of no serial correlation. Hence, both the Compliance-Index Model and equilibrium-variable models suffer from a serial correlation problem.

The limitation of the Durbin-Watson test is that it can only detect the serial correlation of one period lag (one year). However, the Breusch-Godfrey test can detect autocorrelation up to any period lag (Brooks, 2008). Therefore, the Breusch-Godfrey test was run on 12-period lags (12 years), which is the time period of the sample of this study.

Table 5.16: Breusch-Godfrey LM test for autocorrelation for 12-period lag (12 years)

	lags(p)	chi2	Df	Prob > chi2
The Compliance-Index Model	12	38.658	12	0.0001***
The Equilibrium-variable model	12	25.397	12	0.013**
H0: no serial correlation				

*** p<0.01, ** p<0.05, * p<0.1

Table 5.16 reveals that the results of the Breusch-Godfrey LM test for 12-period lag (12 years) indicate that the Compliance-Index Model and equilibrium-variable model suffer from serial correlation. Since the Chi2 values for Compliance-Index Model and equilibrium-variable model are 38.658 and 25.397, respectively, these Chi2 values are high and significant at 1%, indicating the rejection of the null hypothesis of no serial correlation. In conclusion, the results of the Breusch-Godfrey LM test and Durbin-Watson test confirm the presence of the Autocorrelation problem in both the Compliance-Index Model and equilibrium-variable model.

To sum up, the results of the OLS tests show that the data of the study has met only the linearity and multicollinearity assumptions. However, regarding the remaining assumptions, First, the results show that all of the study's variables do not follow the normal distribution. Thus, all the continuous variables in this study are winsorised up to the 5th and beyond the 95th percentiles to mitigate the issue of the non-normalities. Second, the compliance-index model and the equilibrium-variable model show evidence of heteroscedasticity and serial correlation thus. This study used random- effects model based on Generalised Least Squares (GLS) To account for the problem of heteroscedasticity and autocorrelation presented in the compliance-index model as suggested by prior studies (Alzoubi, 2017; Brooks, 2008; Sáenz González & García-Meca, 2014; Shen & Chih, 2007). Regarding the issues of the heteroscedasticity and autocorrelation in the equilibrium-variable model, this study follows prior studies (Masliza et al., 2011; Kouaib & Jarboui, 2016; Mayur & Saravanan, 2017) that use Feasible Generalised Least Squares (FGLS) regression proposed by (Wooldridge, 2001) to account for these issues. Sections 5.7.1 and 5.7.2 provide justifications of the selection of these models to account for the problems of heteroscedasticity and autocorrelation in this study.

5.7 Empirical results and discussion

Following the discussion on the OLS assumptions in Section 5.6, this section presents a discussion of the results of the compliance-index model and the equilibrium-variable model. The compliance-index model aims to examine the relationship between SCGI and earnings management practices, while the equilibrium-variable model investigates the relationship between individual corporate governance characteristics and earnings management.

5.7.1 Empirical Results and discussion of the compliance index model

Since the data of this study combined both time series and cross-section observations, they represent panel data (Gujarati, 2003). Thus, similarly to Al-Okaily et al. (2020) and Setia-Atmaja et al. (2011) Breusch and Pagan Lagrangian multiplier test was conducted first to ascertain whether OLS or random effect model is better suited for the data of this study. The null hypothesis of the test states that there is no random effect in the data (Setia-Atmaja et al., 2011).

Table 5.17: Breusch and Pagan Lagrangan multiplier test for random effects

chibar2(01)	Prob > chibar2
95.05	0.0000***

***, ** and * denote significance at 1%, 5% and 10% levels, respectively.

As shown in Table 5.17, the value of chibar is (95.05) and the p=0.00, which indicates rejecting the null hypothesis of no random effect at 1% level of significance. Thus, these results of the Breusch and Pagan Lagrangian (LM) test in Table 5.17 support the use of the random effect model (i.e., panel data regression).

Second, in order to determine whether the random-effect model is the model that best fits the data, Hausman's (1978) specification test was conducted following prior studies that used the Hausman test to determine whether to run fixed or the random-effect model (Setia-Atmaja et al., 2011; Sáenz González & García-Meca, 2014; Gujarati, 2003; Brooks, 2008).

The null hypothesis of the Hausman (1978) test states that there is no significant difference between fixed and random effect models (Gujarati, 2003). Besides, the Hausman test examined whether there is any correlation between the error term (u) and the independent

variables in the model, which refers to exogeneity (Alzoubi, 2017). If no correlation exists, the random-effects model should be used; however, if correlation exists, the fixed-effects model should be used (Alzoubi, 2017).

Table 5.18: Hausman (1978) specification test

	Coef.
Chi-square test value	6.84
P-value	0.3358

The non-significant results obtained from the Hausman test (Chi-square 6.84, p=0.36) in Table 5.18 indicates that there are no significant differences between fixed and random effect models, and the error term (u) is not correlated with independent variables. Hence, the random effect model should be used in this study (Gujarati, 2003). The random effect requires the assumption of no correlation between the error term (u) and the independent variables. Also, it assumes that the error term should have zero mean, constant variance, and independence from the other individual error terms in the data (autocorrelation) (Brooks, 2008). The random-effect model used in this study has met the assumption of no correlation between the error term (u) and the independent variables, since the Hausman test results confirmed this case.

As shown in Section 5.6 the OLS model suffers from heteroscedasticity and autocorrelation issues. Thus, using OLS in this study will render the OLS estimates to be inefficient (Brooks, 2008). To account for the problem of heteroscedasticity and autocorrelation , this study used random-effects based on Generalised Least Squares (GLS)27as suggested by prior studies (Alzoubi, 2017; Brooks, 2008; Sáenz González & García-Meca, 2014; Shen & Chih, 2007).

[27] In the previous section, the researcher mentioned the random-effects model as suggested by the Hausman test. However, here the researcher runs In STATA software random-effects based on Generalised Least Squares (GLS) because GLS is a remedy for heteroscedasticity and autocorrelation issues.

Table 5.19: Random effects (GLS) findings of the compliance-index model based on the modified Jones Model (1995)

Dependent variable	Coef.	z-value
EMJ		
Independent variables		
SCGI	-0.0002171**	-2.18
Control Variables		
FSZ	-0.0079818***	-5.06
LEV	0.0452864 ***	4.46
ROA	0.0426423*	1.77
BIG4	0.000727	0.73
LOSS	0.0132902***	3.29
Constant	0.1556693***	7.30
Number of obs.	994	
R-squared	18%	
Chi-square	54. 367***	
Prob > chi2	0.000	

Notes: Variables are defined as follows: Earnings management (EMJ): The absolute value of discretionary accrual represents the firm level of earnings management practices as measured by Modified Jones Model (1995). Saudi Corporate Governance Index (SCGI): Corporate Governance compliance and disclosure index, consisting of (142) Provisions. Governance provisions extracted mainly from 2017 Saudi corporate governance code. A value of 1 is given to each corporate governance provision disclosed by the firms and 0 otherwise; the index scaled to the value between 0% and 100%. Firm Size (FSZ): Measure as the natural logarithm of the total assets of the firm. Leverage (LEV): Measure as the book value of total debt scaled by total assets. Profitability (ROA): Measure as the ratio of net income to total assets. Audit Quality (BIG4): The dummy variable that takes the value of 1 if the firms employ one of the big 4 audit firms in the time t to perform their audit services or zero otherwise. Loss (LOSS): The dummy variable that takes the value of 1 if the firm reports losses or zero otherwise. ***, ** and * denote significance at 1%, 5% and 10% levels, respectively.

Table 5.19 presents the results of Random effects (GLS) regression for the total sample of firms. The EMJ is included as a dependent variable and the SCGI as an independent variable to examine whether corporate governance mechanisms plays a role in constraining earnings management practices. The study also controls for several factors where prior literature has suggested a link either with corporate governance or with earnings management. These include return on assets, firm size, leverage and audit quality (Watts & Zimmerman, 1986; Sáenz González & García-Meca, 2014; Bartov et al., 2000; Cormier et al., 2013; García Lara et al., 2017).

For the total sample, the result indicates that the SCGI is negatively associated with the absolute value of earnings management. This is consistent with the hypothesis H1, which states that there is a significant and negative relationship between firm-level corporate governance and earnings management practices. Table 5.19 shows that the coefficient of SCGI is negative (b=-0.0002171) and statistically significant at 5% level even after controlling for several factors that have been shown to affect the level of earnings

management. Hence, H1 cannot be rejected. Overall, the findings suggest that higher levels of corporate governance score are associated with lower levels of earnings management. In other words, better corporate governance structure (as measured by the higher corporate governance index score) seems to constrain earnings management practices, leading to higher earnings quality. Hence, this result is consistent with the argument of agency theory which suggests that employing a governance system in the firm will help in implementing well-established control and incentive mechanisms to constrain opportunistic behaviours in the company and increase the integrity and reliability of the financial reporting(Jensen and Meckling, 1976).

Similar to this study, other studies have documented the effectiveness of the corporate governance index in limiting earnings management practices. For instance, Bekiris & Doukakis (2011) examine the association between CG mechanism and earnings management by constructing a CG index consisting of 55 individual CG provisions. Their results show a negative relationship between the level of CG mechanism and earnings management. Also, Jiang et al. (2008) find that higher levels of corporate governance score are associated with lower absolute discretionary accruals and higher quality of earnings. Unlike prior studies that limit their investigations of the effectiveness of corporate governance mechanisms to individual governance attributes such as board independence or board size (e.g.,Sáenz González & García-Meca, 2014; Rahman & Ali, 2006; Jamaludin et al., 2015; Peasnell et al., 2005;Saona et al., 2020), this study shows that the multi-dimensional characteristics of the CG index approach provide convincing evidence regarding the collective effect of internal corporate governance mechanisms on reducing earnings management practices.

As discussed above, in line with this study's expectation, corporate governance mechanisms that stem from the Saudi corporate governance code seem to effectively mitigate agency problems and improve the quality of the financial reporting in Saudi firms. Thus, this result has confirmed the effectiveness of the newly implemented governance code in improving the governance practices in Saudi firms. Despite the effectiveness of the SCGC, the magnitude of the SCGI coefficient is very low (b=-0.0002171), suggesting that the contextual factors in Saudi Arabia, such as the priority of informal arrangements like family tribal relationships and the dominance of family members in Saudi firms, might affect the ability of the corporate governance mechanisms in constraining earnings management

practices in the Saudi firms[28]. Hence, Saudi policymakers are encouraged to introduce regulations that restrict the participation of family members in the firms. Also, they are encouraged to make all the governance provisions in SCGC mandatory for Saudi firms, therapy enhancing the compliance of Saudi firms with the corporate governance provisions of SCGC.

Regarding the control variables, the coefficient of leverage (LEV) is positive and significant at 1% level. This result implies that firms that have high leverage engage significantly more in earnings management practices. This result might be attributed to the debt covenant hypothesis discussed by Watts & Zimmerman (1986). According to Watts & Zimmerman (1986), under positive accounting theory, managers of firms that have debt contracts may use income increasing earnings management if the firms are close to breaching accounting-based covenants. This is because lenders tend to use specific accounting numbers in the debt contracts in order to restrict the managers' ability to take decisions that may reduce the value of the firms. For example, some debt contracts required the working capital value to be above a certain level. This type of covenant used accounting numbers, such as current assets and current liabilities. Thus, due to these types of accounting-based covenants, the managers have an incentive to adopt accounting choices that lead to an increase in reported earnings to avoid violations of the debt covenants. This is because breach of debt covenants is considered a default. In this case, lenders will have the right to take action against the firms, such as seizure of collateral.

The results of Table 5.19 show that return on assets (ROA) has a positive and significant association with earnings management practices. This result is similar to the findings of Sáenz González & García-Meca's (2014) study, which documented that return on assets was positively associated with earnings management practices. As suggested by Healy (1985) and Degeorge et al. (1999), managers might tend to increase the income of the firm by using income increasing earnings management practices in order to obtain high compensation value. Thus, earnings management practices might be positively associated with return on assets.

Table 5.19 also demonstrates that firm size (FSZ) has a negative relationship with earnings management practices, which means that as the firm gets bigger, the earnings management practices decrease. In explaining this relationship, Kim et al. (2003), Cormier et al. (2013),

[28] see sections 5.7.3 and 5.7.4.4 for further evidence and discussion on this matter.

and Sáenz González & García-Meca (2014) argue that larger firms tend to have a well-established internal control system and more highly skilled internal auditors than small firms, which in turn contributes to the quality of the disclosed financial information. Kim et al. (2003) add that larger firms may engage less in earnings management than small companies due to the high reputation cost that larger companies might face if they engaged in these practices. Since, larger companies might already have built up their credibility both in the business community and in the sphere of social responsibility (Kim et al. 2003).In addition, Kim et al. (2003) and Sáenz González & García-Meca (2014) assumed that larger companies might engage less in earnings management because they are under greater scrutiny from media, financial analysts and investors than smaller firms. Empirically, Jiang et al. (2008) examine the effect between the level of corporate governance and earnings quality, based on a sample of 4,311 firms observed in the USA in the years 2002-2004. The study controlled for firm size along with the level of corporate governance variables that were assumed to affect earnings management practices. Their study found that the coefficient of the firm's size was negative and significant at 1% level.

Regarding audit quality, previous empirical studies documented that firms that employ big four auditors to perform their audit services tend to report lower earnings management practises(Alzoubi, 2016) lower accounting fraud (Lennox & Pittman, 2010) and lower accounting restatements (Eshleman & Guo, 2014) than firms that employ non-big four auditors. However, the results of this study show that the coefficient of the BIG4 is positively correlated with earnings management practises and is not significant. This result might occur because the effectiveness of the audit firms is examined in developing countries like Saudi Arabia. Khalil & Ozkan (2016) question the theoretical argument states that large audit firms have an incentive to provide high-quality audit to protect their reputation and avoid litigation risk in developing countries. Khalil & Ozkan (2016) claim that this argument might not be applicable in developing country settings where the litigation is less likely to occur due to weak enforcement by the law and weak investor protection in these countries. This, in turn, might cause large audit firms to provide low-quality audit for firms in developing countries. In line with the findings of the study, Habbash & Alghamdi (2016) found no significant association between audit quality and earnings management practices in the sample of Saudi listed companies from 2006 to 2009. Habbash & Alghamdi (2016) state that the ineffective role of audit quality in reducing earnings management practices may be attributed to the low performance of the large audit firms in Saudi companies. According to Habbash & Alghamdi (2016), big 4 audit firms are not working effectively in Saudi Arabia because it is attached to local auditors. Those auditors do not face rigorous rules if they fail

to protect shareholders' interests because there is an absence of strong protection of investors' interests in most developing countries including Saudi Arabia. Also, these big 4 auditors do not face the risk of reputational damage if they fail in their role, because this failure will be attributed to the local auditors.

Regarding the loss variable, Table 5.19 also show that the coefficient of LOSS is positive and significant at 1% level of significance. This result indicates that firms that experience losses engaged more in earnings management practices. According to Kim et al. (2003), firms adopt earnings management practices in order to avoid reporting losses in their financial statements; several other studies reported similar results (Crespí-Cladera & Pascual-Fuster, 2014; García Lara et al., 2017).

5.7.2 Empirical Results and discussion of the Equilibrium-Variable Model

Since the data of this study combined both time series and cross-section observations, they represent panel data (Gujarati, 2003). Thus, similarly to Al-Okaily et al. (2020) and Setia-Atmaja et al. (2011) Breusch and Pagan Lagrangian multiplier test was conducted first to ascertain whether OLS or random effect model is better suited for the data of this study. The null hypothesis of the test states that there is no random effect in the data (Setia-Atmaja et al., 2011).

Table 5.20: Breusch and Pagan Lagrangan multiplier test for random effects

chibar2(01)	Prob > chibar2
51.63	0.0000***

***, ** and * denote significance at 1%, 5% and 10% levels, respectively.

In Table 5.20 the value of chibar is (51.63) and p=0.00, which indicates rejection of the null hypothesis of no random effect at 1% level of significance. Thus, these results of the Breusch and Pagan Lagrangian (LM) test in Table 5.20 support the use of the random effect model.

Second, in order to determine whether the random-effect model is the best model to fit the data, the Hausman (1978) specification test was conducted. The null hypothesis of the Hausman (1978) specification suggests that there are no significant differences between the fixed and random effect models (Gujarati, 2003).

Table 5.21: Hausman (1978) specification test

	Coef.
Chi-square test value	51.63
P-value	0.000***

***, ** and * denote significance at 1%, 5% and 10% levels, respectively.

In Table 5.21 the significant results obtained from the Hausman test (Chi-square 51.63, p=0.00) indicate that there are significant differences between the fixed and random effect models, and the error term (u) is correlated with independent variables. Hence, the fixed-effect model should be used in this study (Gujarati, 2003).

However, since the OLS model for the Equilibrium-Variable Model suffers from heteroscedasticity and autocorrelation issues (see Section 5.6), the OLS becomes inefficient. In order to account for the heteroscedasticity and autocorrelation problem, this study follows prior studies (Masliza et al., 2011; Kouaib & Jarboui, 2016; Mayur & Saravanan, 2017) that use Feasible Generalised Least Squares (FGLS) regression proposed by (Wooldridge, 2001) to account for the issues of heteroscedasticity and autocorrelation.

Table 5.22: FGLS regression findings of the equilibrium-variable model (EVM) based on the Modified Jones Model (1995)

Dependent variable	Coef.	z-value
EMJ		
Independent variables		
STRIND	-0.0115822***	-2.92
AUDINDEX	-4.92e-07	-0.00
BRDSIZE	-0.0024588***	-5.37
BRDMEET	0.0014476***	3.46
AUDMEET	-0.0007**	-2.56
INTERLOCK	-0.0026444	-0.94
FAMMB	-0.0018325	-0.30
GOVOWN	-0.0002793***	-4.52
INSTOWN	-0.0001971***	-3.65
FAMOWN	-0.0000901*	-1.65
BLOCKOWN	-0.0004015	-1.47
Control Variables		
FSZ	-0.0059545***	-5.78
LEV	0.0414319***	7.29
ROA	0.0335956***	2.67
BIG4	0.0063868***	3.98
LOSS	0.0100754***	4.24
Constant	0.1368032***	10.17
Number of obs.	993	
Chi-square	2609.989***	
Prob > chi2	0.0000	

Note: This table presents the estimated (FGLS) coefficients for the model that examined the effect of individual corporate governance mechanisms on earnings management practices in Saudi listed firms. Variables are defined as follows: Earnings management (EMJ): The absolute value of discretionary accrual represents the firm level of earnings management practices as measured by Modified Jones Model (1995). Strict Independent Directors (STRIND): The proportion of strict independent directors to total board members who meet all the independence criteria in the 2017 SCGC. Audit Independent Index (AUDINDEX): Independent disclosure index for the independent directors in the audit committee, consisting of the 11 independence criteria in the 2017 SCGC. A value of 1 is given if the independent member meets one of the 11 independence criteria and 0 otherwise. Board Size (BRDSIZE): The number of directors on the board. Board Meeting (BRDMEET): The number of board meetings held annually by the board of directors. Audit Meeting (AUDMEET): The number of audit committee meetings. Directors with Multiple Directorships (INTERLOCK): The proportion of directors on the board having at least one additional directorship in another company. Family Members on the Board (FAMMB): The proportion of family members on the board to total board members. Government Ownership (GOVOWN): Percentage of shares held by government shareholders. Institutional Ownership (INSTOWN): Percentage of shares held by institutional shareholders. Family Ownership (FAMOWN): Percentage of shares held by family shareholders. Blockholders Ownership (BLOCKOWN): Percentage of shares held by individual shareholders who own more than 5% of the total shares of the firm. Firm Size (FSZ): Measure as the natural logarithm of the total assets of the firm. Leverage (LEV): Measure as the book value of total debt scaled by total assets. Profitability (ROA): Measure as the ratio of net income to total assets. Audit Quality (BIG4): The dummy variable that takes the value of 1 if the firms employ one of the big 4 audit firms in the time t to perform their audit services or zero otherwise. Loss (LOSS): The dummy variable that takes the value of 1 if the firm reports losses or zero otherwise. ***, ** and * denote significance at 1%, 5% and 10% levels, respectively.

The results of (FGLS) regression in Table 5.22 indicate that the coefficient of the strict board independence (STRIND) is negative and significant at 1% level of significance which is **in line with the second hypothesis of this study.** The second hypothesis states that there is a negative and significant relationship between the proportion of strict independent directors and earnings managing practices. The result in Table 5.22 indicates that the independent directors on the board of Saudi firms who meet all the criteria of independence are effective in monitoring and reducing the practices of earnings management. Thus, H2 is accepted. This result in line with agency theory perspective as Fama & Jensen (1983) consider the board of directors the highest level of decision control systems in the company and it responsible for monitoring management decision processes. Fama and Jensen (1983) state that the board of directors should include outside independent directors to increase the board's effectiveness and decrease the agency problem in the public firms (Fama & Jensen, 1983).

Unlike this study, there are some studies in the literature that evaluate the independence of the independent directors on the board based on only one independent criterion, and they report similar findings to those of this study. For example, Setia-Atmaja et al. (2011) excluded in their measure of board independence all independent directors who had previously worked as executives in the firms. Then, the study found that the proportion of those independent directors had a negative and significant relationship with earnings management practices measured by long and current discretionary accrual. Similarly, by using a subsample of 420 listed Australian firms for the year 2000, Davidson et al. (2005) excluded in their measure of board independence all the outside directors who engaged in transactions with the firms. Then, Davidson et al. (2005) examined the role of these independent directors in relation to earnings management practices. Their findings indicated that board independence is negatively associated with earnings management practices.

Contrary to the results of this study, Katmon & Farooque (2017) reported that the proportion of independent directors did not have a significant effect on constraint of earnings management in UK listed firms. While, Park and Shin (2004) found that the proportion of independent directors is not effective in reducing income increasing earnings management practices that are used by managers to avoid reporting losses and decline in the earnings in Canadian listed firms.

However, these mixed results reported above might be attributed to the use of an inaccurate measure to proxy for board independence. Since using merely the percentage of independent

directors as proxy for the board's independence might not be an accurate measure because not all independent directors have a similar level of independence (Baker & Anderson, 2011). Hence, a broad measure of board independence is needed.

As mentioned above, the findings of this study indicate the effectiveness of strict board independence in reducing earnings management practices in Saudi firms. Hence, this result proved the efficiency of the independence criteria set out in the 2017 SCGC for independent directors on the Saudi corporate board. Thus, Saudi firms should consider applying these independent criteria in selecting independent board directors.

The third hypothesis H3 anticipates that the greater the compliance of Saudi firms with Saudi governance independence requirements for independent directors on the audit committee, the less they engage in earnings management practices. However, the coefficient of the variable AUDINDEX (-4.92e-07) is negative, as the hypothesis predicted, but insignificant. Thus, H3 is rejected. This result is contradicted by the agency theory perspective, which suggests that independent directors strengthen the monitoring practices of the board (Fama & Jensen, 1983; Jensen & Meckling, 1976).

Unlike this study, most studies have measured the independence of the audit committee by computing the proportion of independent directors on the audit committee (Baxter & Cotter, 2009; Kusnadi et al., 2016). Similar to the current study, those studies reported insignificant results for the audit committee's independence in reducing earnings management practices (Kusnadi et al., 2016; Baxter & Cotter, 2009). For example, Baxter & Cotter (2009) studied the effect of audit committee independence on improving earnings quality in Australian listed companies before implementing the compulsory audit committee requirements. The study observed that the ratio of independent directors on the audit committee was negative but exhibited insignificant association with earning management practices as measured by the Modified Jones Model (1995).Similarly,Crespí-Cladera & Pascual-Fuster(2014) analysed the effect of non-strict independent directors sitting on the audit committee on earnings management practices in Spanish-listed firms. The study defined 'non-strict independent directors' as those independent directors who violate at least one of the eight criteria of 'independence' stated in international and Spanish governance codes. The results showed no effect of non-strict independent directors on the audit committee in constraining earnings management practices. However, other studies documented a positive impact of independent directors of the audit committee in curbing earnings management practices (Sharma & Kuang, 2014; Klein, 2002). For example, based on US data,Klein (2002)

documented that the coefficient of the percentage of independent directors on the audit committee was associated negatively with earnings management practices.

This insignificant result of the AUDINDEX variable in this study might be attributed to the fact that some of the independent directors on the audit committee may not be genuinely independent, as recommended by the Saudi Corporate Governance Code. In this study, the independence of the audit committee directors was measured by computing the Audit committee independence index score, which includes 11 independence criteria for independent directors. On average, Saudi firms comply with 7 independent criteria out of 11. Also, only 30% of the Saudi firms in the sample of the study comply with all 11 independence criteria. [29]These statistics indicate that the majority of the Saudi firms have independent directors on the audit committee who are not strictly independent. In principle, the independent directors might be classified by the firm as such, but in practice they might not be genuinely independent since they violate at least one or more of the independence criteria recommended by the Saudi Corporate Governance Code. For instance, almost half of the Saudi firms in the study sample have at least one independent director on the audit committee who represents a legal person holding five percent or more of the shares of the company[30]. Saudi firm classified this independent director who represents a legal person holding five percent or more of the company's shares as an independent director ,although Saudi Corporate Governance Code considers this a serious violation of the independence criteria. Consequently, this independent director should not be classified by Saudi firms as an independent director since his independence could be compromised by his representation of a legal person that holds a large stake of shares in the firm.

Another reason that leads to an insignificant result might be the existence of family members as directors on the board. Saudi firms are dominated by family members in which on average 22% of directors' seats on Saudi firms' boards being occupied by family members (see Table 5.2). Thus, it is expected that the independence of the independent directors on the audit committee might be compromised. This is because controlling shareholders, such as family owners or directors, may be involved in the appointment of independent directors. In this regard, Jaggi et al. (2009) argue that independent directors are less likely to question the practices of family shareholders in the firms, particularly if the latter sit on the board, because the independent directors' reappointment might be at those shareholders' discretion. Thus,

[29] Please see Table 5.2 and Table 5.3 for these statistics.
[30] Please see Table5.4 for these statistics.

the presence of independent directors who are not independent enough, as suggested by the independence criteria of the Saudi Corporate Governance Code, might reduce the effectiveness of the audit committee in detecting earnings management practices in Saudi firms. Jaggi & Leung (2007) empirically observed a reduction in the effectiveness of the audit committee in detecting earnings management practices in firms with a board dominated by family members.

As discussed above, the compliance of Saudi firms with independence criteria for independent directors on the audit committee is ineffective in reducing earnings management practices. Thus, CMA needs to monitor the appointment of independent directors on the audit committee. Also, CMA needs to introduce additional independence criteria for independent directors on the audit committee to enhance the quality of their independence. In addition, As noticed in Table 5.2, the majority of Saudi firms have independent directors on the audit committee who violate at least one or more of the independence criteria, thus CMA are encouraged to introduce some financial penalties for Saudi firms that appoint independent directors that violate at least one or more of the independence criteria recommended by SCGC. These practices are expected to increase the compliance of the Saudi firms with 11 independence criteria.

The fourth hypothesis predicted that a large board size is associated negatively with earnings management practices. The coefficient of the variable board size BRDSIZE (b=-0.0024588) shows an anticipated sign, and it is statistically significant at the 1 percent level. Consequently, H4 cannot be rejected. From an agency theory point of view, larger board will be more vigilant in capturing any agency problems that may arise because of the large number of members observing managers' activities (Kiel & Nicholson, 2003). In this same vein, Beasley & Salterio (2001) argue that larger boards provide more effective monitoring functions, because larger boards increase the possibility of the company having more members with varied experience of financial reporting issues. This argument is confirmed by B Xie et al. (2003) and Abed et al. (2012), who provide evidence showing that larger boards are more effective in reducing earnings management practices because they have more members who share their different experiences in dealing with this matter. But despite the advantages of the large board size, it might have a number of disadvantages. Jamaludin et al. (2015) state that a larger board might be affected by bureaucracy and conflict of views between its members. Haniffa & Hudaib (2006) found that a larger board could be costly to the company since it needs to pay more compensation to the larger number of members. Also, a larger board could encourage members to shirk their duties (Haniffa & Hudaib,

2006). Larger boards might be associated with the free-riding problem (Cheng et al., 2008). This is because the cost of lack of effective monitoring will be distributed across a large number of directors (Cheng et al., 2008). Thus, a large board may encourage members of the board to free-ride on other directors' decisions.

The Saudi Corporate Governance Code suggests that the number of board members should be between three and at most eleven directors. Table 5.2 shows that the average number of board members in Saudi firms is eight, and some firms have gone over the requirement by having a board that comprises 13 members. Hence, Saudi firms are recommended to increase the size of their board since large board sizes in Saudi-listed firms are proven to be effective in reducing earnings management practices.

The fifth hypothesis states that an increase in the number of board meetings leads to a decrease in earnings management practices. Contrary to this study's predictions, the coefficient of BRDMEET reveals an unexpected sign, and is statistically significant at 1%. This result indicates that when the board meets more frequently, it leads to an increase in the practices of earnings management. Accordingly, H5 is rejected. In this regard, Ebrahim (2007) and Vafeas (1999) argue that that firms might be active and meet more frequently during times of crisis. Hence, the increase in the number of the board meetings could be a response from the board to challenging business practices, such as earnings management. If this theoretical argument is valid, Saudi firms might need to consider creating flexible board meeting arrangements that address their unique concerns. For instance, the firms might increase the frequency of the board meetings when they suspect earnings manipulation or when they need to fight hostile takeovers. In contrast, board meetings can be reduced when the firms do not experience significant problems in their operational activities (Ntim & Oseiτ, 2011).

Another explanation for the ineffectiveness of the board meetings in reducing earnings management practices is that independent directors might not be able to take advantage of the board meeting and provide effective monitoring. This could be attributed to the underlying difficulties that face outside directors in reality and reduce their monitoring effectiveness. For example, outside directors on the board are at a significant disadvantage compared to managers in terms of the information they have about the firms (Williamson, 2007), particularly if the CEO holds the position of chairman on the board. This is because the CEO/chairman is a full-time employee who has long service and participates in the firm's

day-to-day management, which enables him to gain broader knowledge of the firm (Lorsch Jay W. & Young, 1990). The CEO/chairman might control the board, and this control entails setting the board agenda, running the board meeting and controlling the amount and type of information disclosed to directors, as well as the discussion in the boardroom (Jensen, 1993).

In contrast to reality, management is often not expected to provide relevant and unbiased information about the firms to the directors (Williamson, 2007). Also, it is costly for independent directors to gather this information by themselves (Williamson, 2007). In the same vein, Brennan (2006) reports that there is an expectation gap between what stakeholders expect from the board of directors and what the board's role is in practice. Brennan (2006) argues that information asymmetry between management and independent directors is considered one of the difficulties that hinder the monitoring role of independent directors. That is, incompetent managers might decide not to disclose accurate information, in order to hide their poor performance. In this situation, even an expert independent director will not be able to exercise proper monitoring, given the lack of information provided by the management (Brennan, 2006).

In addition, the chairman of the board in practice has great influence on the selection of directors (Lorsch Jay W. & Young, 1990). Likewise, Stiles (2001) argues that management is often involved in the selection of the board of directors and controls their compensations, which makes the independent directors less likely to criticise management practices during the meeting.

Furthermore, the majority of independent directors on the board are part-timers who hold directorship positions in other firms (Baird & Rasmussen, 2007). They only meet a few times a year (Lorsch Jay W. & Young, 1990). Given this circumstance, directors might not have sufficient time to investigate all the firm's issues that arise in the meetings; in this case, they might accept the management's justifications of the firms' problems, due to their limited knowledge and time for dealing with such complex issues (Lorsch Jay W. & Young, 1990).

These obstacles that face the independent directors during the meeting might be present in Saudi firms, rendering frequent board meetings to be ineffective in reducing earnings management practices. That is, the data in the study sample show that in 50% of Saudi firms the position of chairman is occupied by a family member. Also, 45% of Saudi firms have a

chairman who is a controlling shareholder, holding more than 5% of the firm's shares[31]. Given this situation, it is expected that the outside directors' independence might be compromised, making them less likely to question the practices of the management during the board meetings.

There are several studies in the literature that document similar results to this study's findings (Ebrahim, 2007; Obigbemi et al., 2016), For example, Ebrahim (2007) observed a positive association between a board meeting and earnings management practices in a sample of manufacturing firms in the US. Ebrahim (2007) interpreted this finding as indicating that the board tends to meet more frequently when the firm is experiencing failure in its performance. Also, based on a sample of Saudi-listed firms, Habbash (2012) found that the frequency of board meetings is ineffective in reducing earnings management practices. Habbash (2012) interprets this result as meaning that the board meeting might not be effective due to the limited time and knowledge available to the directors to enable them to deal with the firm's issues. However, The positive association between board meetings and earnings management practices documented in this study is inconsistent with the findings of those that report negative associations between board meetings and earnings management practices (Chen et al. ,2006 ; Sáenz González and García-Meca ,2014).

The sixth hypothesis suggests that the audit committee meeting is associated negatively with earnings management practices. The coefficient of the AUDMEET (b=-0.0007, z-value = -2.56) is negative and significant at 5% level. Consequently, H6 cannot be rejected. This means that the more frequently the audit committee meets, the less the firm manages its earnings. This finding is consistent with the theoretical assumption suggesting that a diligent audit committee increases the level of control, resulting in better financial reporting quality (Alhossini et al., 2021).

Similar to the findings of this study, the effectiveness of the frequency of audit committee meetings in constraining earnings management practices has been documented in prior studies. (Biao Xie et al., 2003; Soliman & Ragab, 2013). For example, based on a sample of US firms, Biao Xie et al. (2003) reported that audit committee meeting frequency is associated negatively with current discretionary accrual (a proxy of short-term earnings management). In contrast, several studies (Sharma & Kuang, 2014; Yang & Krishnan, 2005) did not find any association between the number of audit committee meetings and earnings

[31] Please see Table 5.3 for these statistics.

management practices. However, Since the audit committee meeting is a proxy for its level of activity (Klein, 2002). Saudi firms meet on average four times a year (4.71) which is the required number of meetings suggested by the Saudi Corporate Governance Code (See Table 5.2). This means that the audit committee in Saudi firms has a high level of activity.

In addition, this study argues that the composition of the audit committee in Saudi firms might contribute to the effectiveness of its meetings in constraining earnings management practices. The governance index data show that 91% of Saudi firms comply with governance provision no. 35, which states that the Chairman of the Board shall not be a member of the audit committee. Additionally, 74% of Saudi firms in the study's sample do not include executive directors among the members of their audit committee (governance provision no. 36)32.These results indicate substantial compliance of Saudi firms with the recommendations of the Saudi Corporate Governance Code in terms of the audit committee. As discussed previously, the presence of the controlling Chairman or managers on the board might negatively affect the independence of the outside directors, and this could reduce the quality of the discussion during meetings, particularly if chairman was family member or controlling shareholder. In line with this argument, He & Yang (2014) empirically documented that the presence of CEO directors on the audit committee could lead to an increase in the practices of earnings management in firms that belong to unregulated industries. Yet, the fact that audit committee in most Saudi firms does not include a chairman and executive directors among its members. This situation, in turn, is likely to make independent directors effective and free from undue pressure. Consequently, this practice will strengthen the effectiveness of the audit meeting in Saudi firms.

The seventh hypothesis states that there is a significant and negative relationship between the proportion of directors who have multiple directorships and earnings management practices. The coefficient of the variable INTERLOCK is negative (b=-0.0026444) but insignificant. Hence, H7 is rejected. The busyness hypothesis can explain this result (Jian Zhou, 2004; Alshetwi, 2016; Jiraporn et al., 2008). This hypothesis suggests that holding several directorships decrease the effectiveness of the directors in monitoring the company since they will be too busy to serve each firm effectively (Jian Zhou, 2004; Alshetwi, 2016; Jiraporn et al., 2008). This situation may reduce the directors' ability to detect earnings management practices (Alshetwi, 2016). In line with this argument, several studies suggest that directors' multiple directorships may negatively affect their performance. For instance,

[32] For brevity reasons, these statistics are not reported in this study but are available upon request.

several authors argue that individuals with cross-directorship positions are more likely to allocate less time and effort to monitoring each company they serve (Beasley, 1996; Jian Zhou, 2004; Lipton & Lorsch, 1992; Lorsch Jay W. & Young, 1990). This obviously will affect their performance, since monitoring the behaviour of top managers requires much time and effort (Morck et al., 1988). In addition, the large number of directorships held by directors may lead them to neglect the role of leadership of the board they serve. This in turn results in directors adopting rent-seeking behaviour, which means that the presence of such directors may actually add no meaningful value to the board of directors (Jamaludin et al., 2015).

The Saudi Corporate Governance Code recommended that a member of the board of directors must not occupy more than five directorships on the boards of listed firms. The data of the study sample show that 95% of Saudi listed firms' directors do not hold more than five directorship positions on the boards of other listed firms[33]. Also, on average half of the directors of Saudi firms (54%) hold multiple directorship positions on other listed firms (see Table 5.2).

However, the results of the study indicate that the proportion of directors holding multiple directorships is not effective in reducing earning management practices. Several studies in the literature provide similar results (Alshetwi, 2016; Hashim & Abdul Rahman, 2006). For example, Alshetwi (2016) examined the association between the proportion of audit committee members who hold several directorship seats and the level of earnings management practices. The study used a sample of 98 Saudi non-financial listed firms in the year 2013. Alsheti (2016) found that audit committee members with multiple directorship positions are not effective in reducing the practices of earnings management. However, other studies provide evidence that proves the effectiveness of directors holding multiple directorships in reducing earnings management practices (e.g.,Be'dard et al., 2004; Masulis & Mobbs, 2011).

The eighth hypothesis suggests that the presence of family members on the board has a positive association with earnings management practices. The coefficient of the variable FAMMB was negative but not significant (B= -0.0018325), (z-value=-0.30). Thus, H8 is rejected. This result indicates that earnings management practices in Saudi firms appeared

[33] For brevity reasons, these statistics are not reported in this study but are available upon request.

to be unaffected by the presence of family firms on the board. This result is in line with the entrenchment hypothesis that suggests that controlling family members might be motivated to engage in opportunistic behaviour at the cost of minority shareholders; that is, to obtain personal benefits that are not distributed to other minority shareholders (Wang, 2006; Shleifer & Vishny, 1997). The entrenchment hypothesis is in line with the agency problem type II which occurs due to the conflict of interests between controlling shareholders and minority shareholders in the firms rather than between managers and owners (Setia-Atmaja et al., 2011; Jaggi et al., 2009) . Since controlling family shareholders/directors might control the board and the management of their firms. Also, they might make decisions at the expense of less powerful shareholders by using their positions and privileged access to superior information (Ali et al., 2007; Al-Okaily et al., 2020).

Similar to the study's finding, Jaggi & Leung (2007) found that the coefficient of the percentage of family directors on the board has a negative but insignificant effect on both earnings management practices, as measured by the Modified Jones Model (1995), and the absolute value of performance-adjusted current discretionary accruals in Hong Kong firms. Although these results indicate that the presence of family members on the board does not have a direct effect on earnings management practices, prior studies (e.g., Prencipe & Bar-Yosef, 2011; Jaggi & Leung, 2007; Jaggi et al., 2009; Wan Mohammad & Wasiuzzaman, 2019) including the current study show that that the presence of family members on the board have indirect effect on earnings management practices through reducing the effectiveness of corporate governance mechanisms in constraining earnings management practices. For instance, the presence of the family members on the board weaken the monitoring effectiveness of the board of directors, since controlling families can interfere with the structure of the board of directors and influence the process of electing and nominating the independent directors on the board (Jaggi et al., 2009; Al-Okaily et al., 2020). Accordingly, those independent director will be less likely to question the practices of family members because their appointment and reappointment on the board might depend on the discretion of controlling family members (Bao and Lewellyn, 2017 ;Eng et al., 2019). Also, the presence of family members on the board might increase the risk of collusion between the independent directors and those family members on the board (Prencipe & Bar-Yosef, 2011).Thus, family directors might involve in earnings management practices and obtain private benefit at the cost of minority shareholders without being affected by any governance mechanism (e.g., appointing independent directors) that might employed by minority shareholders to alleviate their opportunistic practices (Anderson & Reeb, 2004)

In the study's sample, almost half of the Saudi firms have at least more than two family member occupied seats on the board (see Table 5.27). Consequently, this might give them the power to engage in earnings management practices particularly when there is a lack of proper monitoring from the board of directors. Hence, this study suggests that that the increase in the number of family members on the board is not effective in reducing earnings management practices as family directors tend to weaken the effectiveness of corporate governance mechanisms in the companies. Thus, based on this result, this study recommends that Saudi policymakers to introduce rules that restrict the participation of family directors on the board of Saudi-listed firms.

In line with the expectations of this study regarding the ninth hypothesis, the coefficient of government ownership GOVOWN is negative (b=-0.0002793) and highly significant at 1% level of significance. Hence, H9 cannot be rejected. This result implies that the existence of government ownership in Saudi firms is effective in constraining earnings management practices. This finding can be explained by the following argument. According to Guo & Ma (2015), government ownership is usually concentrated in big firms representing important industries and these types of firms often dominate production or services in their industry. Also, such firms receive support from the government, enabling them to gain access to financial resources and obtain tax benefits which will increase the value of the firm. This, in turn, may put less pressure on the managers of these firms to engage in earnings management so as to meet financial targets and thus secure these benefits (Guo & Ma, 2015). This theoretical view applies to the Saudi context since the Saudi government provides generous financial support to their firms, especially in challenging times (Al-Dakhil, 2017). For instance, during the COVID 19 pandemic, the Saudi government announced in April 2020 a large set of government packages to support the private sector and ease the negative impact of the pandemic on the Saudi economy (Saudi government measures, 2020). The government support package includes paying 60% of the salaries of Saudi employees in the private sector and injecting the banking sector with $13.3 billion to improve the liquidity of banking and help the banks provide credit facilities for the private sector. Accordingly, it is expected that managers of Saudi firms with high level of government ownership are less likely to engage in earnings management practices as they do not have pressure to improve the firms' earnings to secure financial benefits as the Saudi government play this role on their behalf. Despite the effectiveness of the presence of government ownership in Saudi firms, the data of the study sample showed that Saudi firms have a low level of Government ownership (GOVOWN) in which they hold, on average, 7.46% of total outstanding shares of Saudi firms(see Table 5.2). Thus, Saudi policymakers such as CMA must encourage Saudi

firms to increase government ownership in their firms to improve the quality of financial reporting.

Consistent with this study's findings, Wang & Yung (2011) documented the effectiveness of state ownership in constraining earnings management practices, as measured by the Modified Jones Model (1991), based on a sample of Chinese listed firms. In a similar institutional environment to that of Saudi firms, Elghuweel et al. (2016) found that Omani listed firms which have government ownership tend to engage significantly less in earnings managements practices compared to firms that do not have government ownership. In contrast to these results, Gaio and Pinto (2018) find that public state-owned firms have higher earnings management practices than non-state public firms.

Consistent **with the tenth hypothesis of this study,** the coefficient of institutional ownership is negative (b=-0.0001971) and significant at 1% level of significance. Thus, H10 cannot be rejected. This result implies that institutional shareholders in Saudi firms play an important role in constraining earnings management practices. This finding suggests that institutional shareholders in Saudi firms might act as a complementary corporate governance mechanism in reducing such practices.

This result can be interpreted by agency theory. According to agency theory, the separation between ownership and control in a modern corporation gives rise to agency cost due to the conflict of interest between shareholders and managers (Jensen & Meckling, 1976). This cost becomes more expensive for diffuse shareholders, as it is more difficult for them to monitor the managers (Koh, 2003). However, the institutional investors in Saudi firms have large ownership in which the mean of the percentage of the outstanding shares held by institutional shareholders is 10%. Due to the concentration of institutional ownership in a small number of shareholders, collective action by institutional investors becomes less costly. As they are a small number of shareholders, they can easily form a homogeneous group (Koh, 2003). This, in turn, will enable them to undertake the monitoring role and share the monitoring expense as well. Furthermore, the high percentage of shares they hold gives them a further incentive to monitor the managers' practices (Koh, 2003).

Additionally, the effectiveness of the institutional shareholders in the Saudi context could be attributed to the fact that majority of them are domestic investors. Since foreign investors are minority investors in Saudi as they own only 12% of the shares in the Saudi Market (Foreign ownership, 2020). According to Liu et al. (2018), domestic investors are expected

to provide superior monitoring, since domestic institutional investors are better acquainted with local regulations, accounting standards, the local language, firm culture, and business model of the firm. These factors together might give domestic institutional investors an advantage in reducing their monitoring cost and thus facilitate their discovery of earnings manipulations (Liu et al., 2018). Based on the above discussion, institutional shareholders in Saudi firms have the ability and the incentive to monitor managers' practices, which leads to a reduction in earnings management practices.

However, similarly to the findings of this study, Alzoubi (2016) examined the effect of several ownership types, including institutional ownership, on earnings management practices, by using a sample of 62 Jordanian firms. They concluded that institutional ownership has a significant impact on reducing the magnitude of discretionary accrual (earnings management practices). In contrast to these results, Bao & Lewellyn (2017) and Sáenz González & García-Meca (2014) found that institutional ownership has no impact on constraining earnings management practices. This result might be attributed to the fact that corporate governance mechanisms might be substituted for each other. For example, if the independence of the board of directors or market for corporate control is effective in the companies, there might be less dependence on other internal corporate governance mechanisms like institutional ownership in the monitoring process.

The eleventh hypothesis states that family ownership has a negative association with the practices of earnings management. The results in Table 5.22 are consistent with the predicted hypothesis in which the coefficient of family ownership is negative (b= -0.0000901) and significant at 10% level of significance. Therefore, H11 cannot be rejected. This result indicates that family ownership has an influence on reducing earnings management practices in Saudi firms. This finding can be interpreted by the alignment effect hypothesis which implies that family firms are less likely to be involved in earnings management practices because these practices might destroy the family's reputation, wealth and long-term performance (Wang, 2006).Therefore, Family shareholders have an incentive to monitor managers' behaviours and reduce their opportunities to engage in earnings management practices.

Wang (2006) empirically confirmed the alignment effect in his study by examining the impact of several measures of family ownership on earnings management practices. The study documented that founding family ownership increases the quality of earnings significantly. Likewise, based on a sample of 12 European countries that have a different

institutional environment, Mengoli et al. (2020) reported that family firms report higher earnings quality than non-family firms. Also, the study documented that family firms in countries that have weak regulations and financial systems (insider-oriented countries) have higher earnings quality than non-family firms. These findings indicate that family ownership in the firms can replace the weak regulations in insider-oriented countries.

In contrast to these findings that support the alignment effect, several studies in the literature reported empirical evidence that family ownership is not effective in reducing earnings management practices. These results support the entrenchment effect hypothesis for family firms (Bonacchi et al., 2018; Yang, 2010; Chen et al., 2020). For instance, Bonacchi et al. (2018) examined whether family listed firms manage earnings through their non-listed subsidiaries. Based on a sample of 644 Italian family listed firms and their non-listed subsidiaries between the years 2003 and 2014, the study found that family firms engage more than non-family firms in earnings management practices. It reported that listed family firms manage their earnings through non-listed subsidiaries in order to avoid reporting losses in their financial reports. Chen et al. (2020) examined whether family firms in the US take advantage of the weakness of the internal control system in order to conduct accounting manipulation. The study also examined whether the SOX 404 public disclosure requirements related to internal control effectiveness reduced these practices in family firms. Chen et al. (2020) found that in the years prior to the introduction of SOX 404, family firms that had weak internal control systems tended to engage more in entrenchment activities such as misstatements, frauds, and related party transactions than non-family firms. However, in the year of the adoption of internal control disclosure, family firms reported fewer misstatement cases. This means that the adoption of SOX 404 has improved the internal control system in family firms, which helps in mitigating their entrenchment practices.

However, in the Saudi context, it seems that the alignment hypothesis is dominant in the firms that have family ownership. This is expected as Saudi Arabia is characterised by having a solid hierarchical social structure (Al-Twaijry et al., 2002; Haniffa & Hudaib, 2006), whereby the social ties between families and tribes are solid in the society (Al-Bassam et al., 2015; Hussainey & Al-Nodel, 2008; Al Nasser, 2020). Hence, these cultural characteristics might induce family shareholders to protect their firms. Since family owners see their firms as valuable assets; thus, they are interested in preserving the family legacy to pass on the firms to the forthcoming generations (Boubaker et al., 2013). Thus, they will be motivated to reduce earnings management practices, since such practices might eventually damage the firm's reputation and destroy the family's wealth (Wang, 2006).

The twelfth hypothesis predicted that blockholders ownership reduces the practices of earnings management. In contrast to this expectation, the coefficient of the blockholders ownership is negative but insignificant. Thus, H12 is rejected. Theoretically, the insignificant effect of blockholders ownership on reducing earnings management practices is contrary to the agency theory perspective, which suggests that the presence of a block holder in the firms can ease the principal-agent problem inherent in modern corporations, which is the conflict of interests is between shareholders and managers (Jensen & Meckling, 1976). Since blockholders usually own a significant stake in the firms, that motivates them to actively monitor managers and serve as a corporate governance mechanism to constrain the opportunistic behaviours of the managers (Shleifer & Vishny, 1997;Dou et al., 2018).

The insignificant effect of blockholders in reducing earnings management in Saudi firms could be attributed to the fact that the ability of blockholders to govern and exercise their voting rights as influential large shareholders depends on the degree of the legal protection of shareholders' voting rights in the country (Shleifer & Vishny, 1997). Saudi Arabia is a developing country with a civil law system with low legal protection of minority shareholders' rights. Hence, the stockholders might be unable to exercise their voting right effectively in Saudi firms, resulting in an insignificant effect on earnings management practices.

In line with this study's result, Peasnell et al. (2005) found that blockholders ownership has a positive but insignificant effect on earnings management practices in UK firms. In contrast with this result, report a negative link between block ownership and earnings management practices (e.g., Lai and Tam ,2017 ; Alzoubi ,2016 ; Dou et al. ,2018).

In conclusion, Table 5.23 presents a summary of all hypotheses and findings for the compliance-index model and equilibrium-variable model.

Table 5.23: A summary of all hypotheses and findings for the compliance-index model and equilibrium-variable model

Dependent Variable	Earnings management estimated by Modified Jones Model (1995) (EMJ)				
Explanatory variable	**No. Hypothesis**	**Expected sign**	**Finding sign**	**Finding significance**	**Hypothesis status**
Saudi Corporate governance Index	1	_	_	Significant at the 5% level	**Accepted**
Board of Directors' Characteristics					
Strict Independent Directors	2	_	_	Significant at the 1% level	**Accepted**
Audit committee Independent Index	3	_	_	Insignificant	**Rejected**
Board Size	4	_	_	Significant at the 1% level	**Accepted**
Board Meeting	5	_	+	Significant at the 1% level	**Rejected**
Audit Meeting	6	_	_	Significant at the 5% level	**Accepted**
Directorships of the Board members	7	_	_	Insignificant	**Rejected**
Family Members on The Board	8	+	_	Insignificant	**Rejected**
Ownership structure					
Government Ownership	9	_	_	Significant at the 1% level	**Accepted**
Institutional Ownership	10	_	_	Significant at the 1% level	**Accepted**
Family Ownership	11	_	_	Significant at the 10% level	**Accepted**
Blockholders Ownership	12	_	_	Insignificant	**Rejected**
Control Variables					
Firm Size		-/+	_	Significant at the 1% level	**Accepted**
Leverage		-/+	+	Significant at the 1% level	**Accepted**
Profitability		_	+	Significant at the 10% level	**Rejected**
Audit Quality		_	+	Insignificant	**Rejected**
Loss		+	+	Significant at the 1% level	**Accepted**

5.7.3 Empirical results and discussion of the role of family ownership in the relationship between corporate governance mechanisms and earnings management practices

The third research question examines the impact of family ownership on the relationship between corporate governance mechanisms and earnings management practices. The study split the full sample based on the level of family ownership. One subsample consists of firms that have high family ownership (more than 30% of the shares of the firm), and the other subsample consists of firms that have low family ownership (less than 30% of the firms' shares). The figure of 30% was used as a cut-off point to distinguish between high and low family ownership because Saudi corporate governance defines a controlling interest as that of shareholders who own 30% of the voting rights of the company (One-share-one-vote rule). Accordingly, they can influence the decisions and actions of the firm.

Table 5.24: Regression results of the effect of family ownership on the relationship between SCGI and EMJ

Panel A: high family ownership level (Family ownership % > = 30 %)			Panel B: low family ownership level (Family ownership % < 30 %)	
Model (1) Random effects (GLS) regression			Model (2) Random effects (GLS) regression	
EMJ Modified Jones Model (1995)	**Coefficient**	**z-value**	**Coefficient**	**z-value**
SCGI	0.0010618***	3.43	-0.0003252***	-3.11
FSZ	-0.0002547	-0.05	-0.004791**	-2.39
LEV	0.0202706	0.89	0.0419158***	3.56
ROA	0.1841237***	3.31	0.0373933	1.37
BIG4	0.0103263***	1.55***	-0.000558	-0.17
LOSS	0.025398**	1.98**	0.0116657***	2.73
Constant	-0.0545593	-0.70	0.1249444***	4.74
Number of obs	173		821	
R-squared	55%		30%	
Chi-square	43.815		70.289	
Prob > chi2	0.00		0.000	
Breusch-Godfrey LM test	21.769**		33.985***	
Breusch-Pagan test	5.35**		52.34***	
Hausman (1978) specification test	4.31		3.43	

Note: ***, ** and * denote significance at 1%, 5% and 10% levels, respectively. Chapter Four provides a detailed definition of the measurement of all the variables used for the estimation.

Table 5.24 presents the results of the subsample of high/low family ownership under the headings Panel A and Panel B. The two models mentioned in Table 5.24 utilise random-effects (GLS) regression because the results of the Hausman (1978) specification test is not significant for models 1 and 2. This suggests using the random effect model for the analysis. Also, the OLS model suffers from heteroscedasticity and autocorrelation issues as the test of heteroscedasticity (Breusch-Pagan test) is significant in both models. This result indicates rejecting the null hypothesis that the model has a constant variance (homoscedasticity). In terms of autocorrelation, the Breusch-Godfrey LM test is significant, which suggests rejecting the null hypothesis of no serial correlation in the model. Since the two models suffer from heteroscedasticity and autocorrelation issues, the use of OLS becomes inefficient. Therefore, following the suggestions of prior studies (Alzoubi, 2017; Brooks, 2008; Sáenz González & García-Meca, 2014; Shen & Chih, 2007), this study accounts for the problem of heteroscedasticity and autocorrelation by applying random-effects

Generalised Least Squares (GLS) regression. Then, random-effects GLS regressions was conducted on each sub-sample applied to Equation 7.

In reference to H13a, this hypothesis suggests that in firms with low family ownership, there is a significant and negative relationship between firm-level corporate governance measured by (SCGI) and earnings management practices. Thus, it is expected that the coefficient of the SCGI will be negative and significant for firms that have low family ownership. On the other hand, H13b states that in firms with high family ownership, the effectiveness of corporate governance mechanisms measured by (SCGI) in constraining earnings management practices will be reduced. The results in Table 5.24 Panel B show that for the firms that have low family ownership (less than 30% of the shares of the firms) the coefficient of SCGI is negative (b=- 0.0003252) and highly significant at 1% level of significance (z-value =-3.11). Hence, hypothesis H13a cannot be rejected. However, these results indicate that strong compliance with corporate governance provisions is effective in constraining earnings management practices in firms that have low family ownership. On the other hand, the results in Table 5.24 Panel A show that the coefficient of SCGI is positive (b=0.0010618) and significant (z-value =3.43). This indicates that for firms with high family ownership, the increase in the level of compliance with corporate governance provisions is not effective in constraining the practices of earnings management. Thus, hypothesis H12b cannot be rejected.

The effect of corporate governance in constraining earnings management practices in the family ownership context can be explained by the alignment and entrenchment hypotheses. However, a closer inspection of Table 5.24 shows that for Saudi firms, the behaviour of family owners under the alignment or the entrenchment effect seems to be contingent on the level of their ownership. When the family members own more than 30% of the firm's shares, they act under the entrenchment hypothesis. Thus, the relationship between corporate governance practices is positively associated with earnings management. However, when the family shareholders own less than 30% of the shares of the firms, family owners tend to act under the alignment effect, and the corporate governance becomes effective in constraining earnings management practices. Similar findings were documented by Wang (2006), who found that the entrenchment and the alignment effect occur at a certain level of family ownership, where the relationship of earnings quality and family ownership showed an inverted U-shape. Wang (2006) shows that when family ownership reached the level of 67.44%, family firms reported lower earnings management practices than non-family firms. However, when the family ownership level rose above 67.44%, family firms engaged more

in earnings management practices than non-family firms. Wang (2006) concluded that when family members own a highly significant number of shares of the firm, they tend to behave according to the entrenchment hypothesis. However, a low family ownership level causes family owners to act under the alignment hypothesis.

The entrenchment hypothesis suggests that family ownership can induce earnings management practices at the expense of minority shareholders and obtain private benefits that cost other minority shareholders (Wang, 2006). The entrenchment hypothesis is in line with the agency problem type II which occurs due to the conflict of interests between controlling shareholders and minority shareholders in firms rather than between managers and owners (Setia-Atmaja et al., 2011; Jaggi et al., 2009).

However, there are several reasons that explain why family members in Saudi firms behave under the entrenchment effect when they hold more than 30% of the firm's shares. First, owning 30% of the firm's shares enables the shareholders to influence the firm's decisions and actions, since they control 30% of the voting rights of the company (One-share-one-vote rule). As a consequence, controlling families can interfere with the structure of the board's directors. For instance, they can influence the process of electing and nominating the independent directors on the board (Jaggi et al., 2009; Al-Okaily et al., 2020). Those independent directors will be less objective and independent because their appointment and reappointment on the board might depend on the discretion of controlling family members (Bao & Lewellyn, 2017). Second, the independent directors might have an implicit relationship with the firms' controlling families (Prencipe & Bar-Yosef, 2011). Thus, their independence is likely to be compromised. In line with this argument, Eng et al. (2019) argue that the independent directors in family firms might be less likely to question and challenge the practices of the controlling family, particularly if the family members sit on the board as directors or executive members (Prencipe & Bar-Yosef, 2011). The lack of independence of the directors and the familiarity of the directors with the controlling family might give rise to the risk of collusion between the controlling families and the board members (Prencipe & Bar-Yosef, 2011). This, in turn, will reduce the effectiveness of the board in monitoring the decisions taken by the family owners in relation to accounting policies, including earnings management practices (Prencipe & Bar-Yosef, 2011). Also , such board will be less likely discipline controlling family shareholders (Anderson & Reeb, 2003).

Based on this discussion, it is expected that the board of directors in Saudi firms would not be effective and would suffer from all the problems mentioned above. This is because the

board of directors of Saudi firms includes family members, who, on average, make up 22% of the board's membership (See Table 5.2). Also, half of Saudi firms in the study sample (50%) have the position of chairman occupied by a family member (See Table 5.3), while almost a third of Saudi firms have at least one family member appointed as an independent director on the board (See Table 5.4). Given these facts, it can be concluded that the board of directors in Saudi firms is heavily dominated by family members. Thus, corporate governance mechanisms are not effective in constraining earnings management practices when the family ownership is high. Based on this discussion, Saudi regulators such as CMA should introduce regulations that prevent family members from owning more than 30% of the firm's shares since the current study shows that this threshold triggers the entrenchment practices of family members in Saudi firms. Also, CMA is encouraged to introduce governance regulations that aim to restrict the influence of family members in Saudi firms. Currently, there are no regulations in the SCGC, listing rules or Companies Act related to the participation of family members in the listed Saudi firms.

In line with this study's findings, several studies provide evidence that support the entrenchment hypothesis, documenting that in family-controlled firms, the corporate governance mechanism is not effective in reducing earnings management practices (Prencipe & Bar-Yosef, 2011; Jaggi & Leung, 2007; Jaggi et al., 2009). For example, Jaggi et al. (2009) examined whether the effectiveness of independent directors in constraining earnings management practices is reduced in family controlled firms. Using a sample of listed firms in Hong Kong, the results show that a higher proportion of independent directors on corporate boards is associated with lower earnings management practices. However, the effectiveness of the independent directors in constraining earnings management practices declines when a family controls the firms via both ownership concentration and the presence of family board members. Likewise, based on a sample of Italian listed firms, Prencipe & Bar-Yosef (2011) tested the effectiveness of the board's independent directors and CEO duality in reducing the practices of earnings management as measured by abnormal working accrual. First, the study found that the independent directors and CEO duality was effective in constraining earnings management practices for the full sample of family and non-family-controlled firms. However, in family-controlled firms, the presence of independent directors on the board significantly increased the practices of earnings management. This result indicated that the governance mechanism becomes ineffective in family-controlled firms.

Yet, the current study found that the corporate governance mechanism is effective in constraining earnings management practices in Saudi listed firms with low family ownership

(less than 30% of the firm's shares). It is worth mentioning that family shareholders who own less than 30% might not have a strong influence on the firms' decisions as shareholders who own more than 30% of the shares of the firm. Therefore, in this case, the family owners cannot control the board of directors or affect the policies and practices of the firms. The effectiveness of the corporate governance mechanism in constraining earnings management practices in Saudi listed firms that have low family ownership can be explained by the alignment effect hypothesis. From the alignment effect perspective, family firms are less likely to involve themselves in earnings management practices because these practices might destroy the family's reputation, wealth, and long-term performance (Wang, 2006). Thus, family owners will be less motivated to engage in earnings management practices since their interests align with those of minority shareholders. According to Jaggi et al. (2009), managers in family firms might not be motivated to engage in earnings management practices as they face less pressure to meet short-term earnings goals. This is because family shareholders often focus on long-term objectives of their firms. Besides, family members might be involved in the management of the firms (Stockmans et al., 2013). Therefore, they have the ability to monitor managers' behaviour and reduce their opportunities to engage in earnings management practices (Yang, 2010). Since earnings management is not in the family's interest, family shareholders might be motivated to strengthen the corporate governance system in order to constrain earnings management practices in the firms. In this regard, several studies have provided empirical evidence of the effectiveness of corporate governance mechanisms in reducing earnings management practices in family-controlled firms (Setia-Atmaja et al., 2011; Stockmans et al., 2013). For instance, Setia-Atmaja et al. (2011) evaluated the effect of board independence in constraining earnings management practices in family-controlled firms listed on the Australian Securities Exchange (ASX). The findings indicated that the proportion of independent directors significantly reduces the practice of two types of earnings management in family firms, namely current and long discretionary accrual. Also, they found that the presence of an independent chairman is effective in family firms only when there are effective independent directors who support him on the board. Hence, the study concluded that board independence is effective in mitigating the type II agency problem and the entrenchment effect, which is a common problem in family-controlled firms. In line with this finding, Stockmans et al. (2013) found that the proportion of independent directors and CEO duality is effective in limiting the practices of earnings management in family firms that face the type II agency problem, where there is a conflict of interest between controlling family shareholders and minority shareholders. However, the study did not find that these board characteristics are effective

in limiting earnings management practices in private family firms which did not suffer from an agency problem.

5.7.4 Robustness tests

5.7.4.1 Robustness tests for the compliance index model using alternative earnings management models

Earnings management models may involve several limitations (Dechow et al., 2010). Thus, it is essential to check whether the results of the study are robust to the alternative measure of discretionary accrual. Also, to assess the stability of the results, alternative earnings management models were used. Therefore, the model in Equation 7 was re-estimated using the absolute values of discretionary accrual estimated by Kothari (2005) and working capital accrual of the Modified Jones Model (1995).

As discussed in Section 4.5.1.2.3.2 and Section 4.5.1.2.3.3 , several studies such as Dechow et al. (1995) and Kothari et al. (2005) found that the Modified Jones Model was not well specified when applied to companies that experience extreme performance, in which case it was found that the model yielded a significant proportion of Type I error. Thus, Kothari et al. (2005) attempted to mitigate this problem by controlling for performance through the introduction of return on assets (ROA) into the Modified Jones Model as an additional regressor.

Hence, this study will use Kothari et al.'s (2005) model to ensure that the magnitude of discretionary accrual that is estimated by the use of the Modified Jones Model in the primary test is not affected by the extreme performance of the companies. In addition, this study follows several studies in the literature that used Kothari et al.'s (2005) model to examine the robustness of their results (e.g., Elghuweel et al., 2016; Chen et al., 2008; Black et al., 2017; F. Bekiris & Doukakis, 2011).

This study also chose to employ the working capital accrual of the Modified Jones Model (1995), following the suggestions of prior studies. For instance, several researchers such as Peasnell et al. (2000) and Atieh & Hussain (2012) argue that working capital accrual is a short-term accrual which in turn makes it subject to short-term managers' forecasts and managerial manipulation more than long-term total operating accrual. This is because working capital accrual incorporates accounts that require higher managerial judgement,

such as the estimation of provision of bad debt, inventory obsolescence and warranties (Peasnell et al., 2000). Also, working capital accrual is expected to be reversed within one year or less (Larson et al., 2018). Unlike short-term accrual, the manipulation in long-term accrual is more likely to attract the attention of auditors and investors. For example, Beneish (1998) and Young (1999) argue that earnings management is less likely to occur via depreciation, which is a component of long-term accrual. This is because changing the depreciation policy such as amending the useful life of the assets or altering the depreciation methods (e.g., switching from the straight-line method to the declining balance method) cannot occur without disclosure in financial reports, which will attract the attention of auditors and investors. Thus, Beneish (1998) and Young (1999) expected that managers would not resort primarily to depreciation to manipulate reported earnings. Therefore it is likely that working capital accrual will involve more frequent manipulation than total operating accrual (Atieh & Hussain, 2012). Hence, working capital accrual might be more effective in measuring earnings management than total operating accrual since it is more likely to reflect the discretionary behaviour of the managers (Peasnell et al., 2000; Peasnell et al., 2005; Atieh & Hussain, 2012).

Table 5.25: Random GLS Model regression results for the compliance index based on three earnings management measures: Modified Jones Model (1995), Kothari (2005) and working capital accrual of Modified Jones Model (1995).

Dependent variable	Model (1) Modified Jones Model (1995). (EMJ)	Model (2) Kothari (2005) (EMKOTH)	Model (3) working capital accrual (WCAEM)
Independent Variables			
SCGI	-0.0002171**(-2.18)	-0.0001861**(-2.11)	-0.0010704***(-6.58)
Control Variables			
FSZ	-0.0079818***(-5.06)	-0.0054867***(-4.11)	0.0019026(1.05)
LEV	0.0452864 ***(4.46)	0.0262622***(3.00)	-0.0386805***(-2.89)
ROA	0.0426423*(1.77)	0.0086487(0.41)	-0.0172678(-0.53)
BIG4	0.0021099(0.73)	0.0055172**(2.19)	0.0090608 **(2.16)
LOSS	0.0132902***(3.29)	0.0025758 (0.72)	0.0177212 ***(2.83)
Constant	0.1556693***(7.30)	0.1201127 ***(6.65)	0.1017438***(4.11)
Number of obs	994	994	994
R-squared	18%	17%	15%
Chi-square	54. 367***	30.670***	61.689***
Prob > chi2	0.000	0.000	0.000

Note: Z -value between parentheses. ***, ** and * denote significance at 1%, 5% and 10% levels, respectively. Chapter Four provides a detailed definition of the measurement of all the variables used for the estimation.

Table 5.25 reports the results for the alternative earnings management models, which are Kothari (2005) and working capital accrual. The results are similar to the main findings of the Modified Jones Model (1995) presented in model (1). The coefficient of SCGI in models (2) and (3) remain negative and significant across in all three models. Hence, the results correspond with H1, which suggest that a higher level of corporate governance disclosure is effective in reducing earnings management practices conducted via long- and short-term discretionary accrual.

However, the degree of significance of the SCGI coefficient in model (3) is higher than the coefficients of SCGI in models (1) and (2), in which in the former it is negative and significant at 1% (B= -0.0010704) (z- value =-6.58) and in the latter is significant at 5%. This result indicates that compliance with corporate governance provisions seems to be more effective in reducing short-term earnings management practices (working capital accrual) than long-term accrual which is estimated by Kothari (2005) and the Modified Jones Model (1995). However, based on the above results, it can be concluded that the results of this study are robust and not derived from misspecifications of particular earnings management models.

5.7.4.2 Robustness tests for the equilibrium-variable model (EVM) using alternative earnings management models

In order to check the stability of the results in the equilibrium-variable model (EVM), alternative earnings management models were used. The model in Equation 8 was re-estimated using the absolute values of discretionary accrual estimated by Kothari (2005) (EMKOTH), and discretionary working capital accrual of the Modified Jones Model (1995) (WCAEM) as a dependent variable. Table 5.26 shows that some of the results of the variables in (EVM) are in line with those presented in Model (1), estimated by the Modified Jones Model (1995) (EMJ). The coefficient of the proportion of the strict independent directors (STRIND) has a negative and significant relationship with EMKOTH and EMJ, which consider the estimation of long-term discretionary accrual. Unlike these results in Model (3), the coefficient of STRIND is negative but has an insignificant effect on discretionary working capital accrual (WCAEM). This indicated that independent directors are only effective in constraining earnings management practices that affect the reported earnings in the long run (i.e., long-term discretionary accrual). This is because independent directors are more likely to detect earnings management practices that conducted via long-term discretionary accrual, as this type of manipulation cannot be conducted without being disclosed in the financial reports (Beneish, 1998; Young, 1999). As a consequence, long-term discretionary accrual might be brought more promptly to the attention of auditors and investors (Beneish, 1998; Young, 1999). Hence, independent directors might have the ability to spot these practices and mitigate them. In contrast, discretionary working capital accrual (WCAEM) is a short-term earnings manipulation, its effect on the reported earnings is likely to be reversed within one year or less (Larsonet al., 2018). Thus, it might be very difficult for independent directors to detect them.

Table 5.26: FGLS regression findings of the equilibrium-variable models based on three earnings management models (EMJ, EMKOTH and WCAEM)

Dependent variable	Model (1) Modified Jones Model (1995) EMJ	Model (2) Kothari (2005) EMKOTH	Model (3) Working capital accrual WCAEM
Independent Variables			
STRIND	-0.0115822***(-2.92)	-0.0095799***(-2.62)	-0.0005214 (-0.08)
AUDINDEX	-4.92e-07 (-0.00)	0.0001964 (1.10)	-0.000778**(-2.03)
BRDSIZE	-0.0024588*** (-5.37)	-0.0017855***(-3.66)	0.0010155(0.87)
BRDMEET	0.0014476*** (3.46)	0.0007185**(2.13)	0.0020121***(2.78)
AUDMEET	-0.0007** (-2.56)	-0.0007087***(-2.78)	-0.0032792***(-5.66)
INTERLOCK	-0.0026444 (-0.94)	-0.0042167(-1.62)	-0.0130436 ***(-3.99)
FAMMB	-0.0018325 (-0.30)	0.0001253 (0.02)	-0.026267***(-3.59)
GOVOWN	-0.0002793*** (-4.52)	-0.0001111* (-1.95)	-0.0000404(-0.26)
INSTOWN	-0.0001971*** (-3.65)	-0.0000575*(-1.86)	0.0000421(0.45)
FAMOWN	-0.0000901* (-1.65)	-0.0000297 (-0.54)	-0.0000393(-0.48)
BLOCKOWN	-0.0004015 (-1.47)	-8.30e-06 (-0.04)	0.0002836(0.78)
Control Variables			
FSZ	-0.0059545*** (-5.78)	-0.0043288*** (-5.34)	-0.0043282**(-2.14)
LEV	0.0414319*** (7.29)	0.0267365***(4.86)	-0.002391(-0.20)
ROA	0.0335956*** (2.67)	0.0031439 (0.27)	0.0583756**(2.05)
BIG4	0.0063868*** (3.98)	0.0101353***(7.35)	0.0058404*(1.71)
LOSS	0.0100754*** (4.24)	0.001134 (0.50)	0.0097024*(1.93)
Constant	0.1368032***(10.17)	0.1080119*** (10.18)	0.1307795***(5.14)
Number of obs	993	993	993
Chi-square	2609.989***	488.779***	7888.380***
Prob > chi2	0.0000	0.0000	0.0000

Note: Z -value between parentheses. ***, ** and * denote significance at 1%, 5% and 10% levels, respectively. Chapter Four provides a detailed definition of the measurement of all the variables used for the estimation.

As shown in Table 5.26 the coefficient of strict Audit Independent Index AUINDEX has insignificant influence in constraining earnings management practices via long-term discretionary accrual as measured by EMJ and EMKOTH in Models (1) and 2 respectively. Yet, in Model (3) the coefficient of AUINDEX is negative and significantly associated with WCAEM. This result implies that the more the Saudi firms comply with the independent criteria for the independent directors on the audit committee, the lower short-term earnings management practices they have. These results indicate that compliance with the independence criteria is effective only in reducing earnings management practices conducted via short-term discretionary accrual.

The results for board meeting BRDMEET and audit meeting AUDMEET remain the same across all three models in Table 5.26 in which the coefficient BRDMEET has a positive

influence on earnings management practices, while the coefficient of audit meeting AUDMEET shows a negative and significant relationship with earnings management practices.

The coefficient of INTERLOCK shows a negative sign with earnings management practices but is significant only on WCAEM. This result implies that directors who have multiple directorships in other firms are effective only in reducing short-term earnings management practices. Similarly to INTERLOCK, the presence of family members on the board (FAMMB) is effective only in reducing short-term earnings management practices (WCAEM).

In term of ownership variables, it appears from the results in Table 5.26, Model (1) and (2) that government and institutional ownership is effective in constraining earnings management practices conducted via long-discretionary accrual EMJ and EMKOTH, in which the coefficients of GOVOWN and INSTOWN were negative and significant at 1% and 10% level of significance respectively. However, none of them has an impact on reducing short-term earnings management practices in Model (3).

In Models (2) and (3), the coefficient of family ownership FAMOWN is not significant on EMKOTH and WCAEM. However, FAMOWN is effective only in reducing earnings management practices estimated by EMJ. In Table 5.26, blockholders' ownership is not effective in lowering earnings management practice across the three models.

In terms of control variables, the results of firm size and audit quality on Models (2) and (3) are similar to the results presented in the main Model (1). Larger firm size is effective in constraining earnings management practices conducted via long-and-short discretionary accrual. In addition, higher audit quality seems to increase the practices of earnings management, since the coefficient of BIG4 is positively and significantly associated with all three earnings management models.

5.7.4.3 Robustness tests for subsamples of firms that have high and low family ownership using alternative earnings management models

In order to answer the third research question, which aimed to examine the impact of family ownership on the relationship between corporate governance mechanism and earnings management practices, the study split the full sample based on the level of family ownership. One subsample consists of firms with high family ownership (more than 30% of the shares of the firm) and the other subsample contains the firms with low family ownership (less than 30% of the firm's shares). Then, regression was conducted on each sample applied to Equation 7.

However, to alleviate concerns that results might be driven by the misspecifications of earnings management models, the two regressions for each subsample were re-estimated by using alternative earnings management models: namely, the absolute values of discretionary accrual estimated by Kothari (2005) (EMKOTH) and the working capital accrual of the Modified Jones model (1995) (WCAEM). Table 5.27 reports the results for the alternative earnings management models, EMKOTH and WCAEM. The results are qualitatively similar to the main findings of the Modified Jones Model (1995) presented in Table 5.27. In Panels B and D, the coefficient of SCGI for firms that have low family ownership remains negative and significant for regression estimated on the basis of EMKOTH and WCAEM. Therefore, this supports hypothesis H13a, which states that corporate governance is effective in reducing earnings practices in firms that have low family ownership. However, hypothesis H13b expected the coefficient of SCGI to be insignificant or positive for the subsample of firms with high family ownership. Table 5.27 Panel A shows that in firms with high family ownership, the coefficient of SCGI is positively and significantly (b=0.0008412) (z-value = 3.14) associated with EMKOTH. This result is in line with the findings of the model based on EMJ in Table 5.27 Panel A. However, in Table 5.27 Panel C the coefficient of SCGI for a subsample of firms that have high family ownership shows a negative but insignificant relationship with WCAEM. Thus, the results of Panels C and D indicate that in firms that have high ownership, the corporate governance mechanism does not constrain earnings management. Overall, it can be concluded that the results of the subsamples of family ownership are robust for alternative earnings management and are not derived from misspecifications of the earnings management models.

Table 5.27: Regression results for subsamples of firms that have high and low family ownership using alternative earnings management models

Panel A: high family ownership level (Family ownership % > = 30 %)			Panel B: low family ownership level (Family ownership % < 30 %)		Panel C: high family ownership level (Family ownership % > = 30 %)		Panel D: low family ownership level (Family ownership % < 30 %)	
Model (1) Random effects (GLS) regression Dependent variable: EMKOTH			**Model (2) Random effects (GLS) regression EMKOTH**		**Model (3) Fixed effects regression WCAEM**		**Model (4) Fixed effects regression WCAEM**	
	Coefficient	**z-value**	**Coefficient**	**z-value**	**Coefficient**	**t-value**	**Coefficient**	**t-value**
SCGI	0.0008412***	3.14	-0.0002251**	-2.46	-0.0006687	-0.89	-0.0011576 ***	-5.51
FSZ	0.0012958	0.27	-0.0023781*	-1.80	0.0296568	1.38	-0.0275003 **	-2.46
LEV	0.0032038	0.16	0.0210831	2.38	-0.0439329	-0.63	0.0191897	0.63
ROA	0.2078738***	4.32	-0.0170762**	-0.81	0.3161036**	2.16	0.1154408*	1.95
BIG4	0.013508**	2.35	0.0025948	1.01	-0.0139132	-0.78	0.0012925	0.20
LOSS	0.0111856	1.01	0.0006165	0.17	-0.0153002	-0.68	0.0172365**	2.09
Constant	-0.0626874	-0.93	0.0819803***	4.37	-0.3303956	-1.17	0.51631***	3.38
Number of obs	173		821		173		821	
R-squared	73%		37%		8.8%		13%	
Chi-square	69.248		80.487		F-test 2.183		F-test 2.26	
Prob > chi2	0.000		0.000		Prob > F 0.001		Prob > F 0.0000	
Breusch-Godfrey LM test	31.44***		34.047***		11.063		52.593***	
Breusch-Pagan test	8.41***		29.97***		7.19***		45.99***	
Hausman (1978) specification test	3.186		2.979		11.529*		38.08***	
Breusch and Pagan Lagrangian multiplier test for random effects	15.36***		11.52***		_		_	

Note: ***, ** and * denote significance at 1%, 5% and 10% levels, respectively. Chapter Four provides a detailed definition of the measurement of all the variables used for the estimation.

5.7.4.4 Robustness test for a subsample of firms that have high and low family ownership using an alternative proxy for family control

In section 5.7.3, the study examined the impact of family ownership on the relationship between corporate governance mechanism and earnings management practices by splitting the full sample based on the percentage of family ownership. One subsample consists of firms with high family ownership (more than 30% of the shares of the firm) and the other subsample contains firms with low family ownership (less than 30% of the firm's shares) applied to Equation 7. The figure 30% was used as a cut-off point for distinguishing high and low family ownership because Saudi corporate governance defines controlling interest as that held by shareholders who own 30% of the voting rights of the company (One-share-one-vote rule). Accordingly, they can influence the decisions and actions of the firms.

In order to examine the stability of the results presented in Table 5.24, the study used another proxy for family control, which is the number of family members on the board, following Jaggi's et al. (2009) and Jaggi & Leung's (2007) studies. According to Jaggi et al. (2009), the board of directors is considered to be under the control of the family if two or more family members sit on the board. This assumes that more than two family members on the board can influence the decisions of the board. Thus, the study divided the sample based on the number of family members on the board. One subsample consists of firms that have more than two family members sitting on the board, and the other subsample consists of firms that have fewer than two family members appointed to the board. Two Random-effects (GLS) regressions were conducted on each subsample using Equation 7. Referring to hypothesis H13a, it is expected that the coefficient of the SCGI will be strongly negative for firms that have few family members on the board and insignificant or positive for the subsample of firms that have large numbers of family members on the board (H13b). The results in Table 5.28 Panels A and B are consistent with the results of the subsample that is divided based on the level of family ownership presented in Panels C and D. The results in Table 5.28 Panel A show that the governance mechanism is not effective in reducing earnings management practices in firms that have a board controlled by family members, since the coefficient of SCGI is positive and insignificant. Hence, hypothesis (H13b) cannot be rejected. However, the results reported in Panel B show that the increase in compliance with corporate governance provisions is effective in reducing earnings management practices in the firms that have fewer than two family members on their boards. Hence, hypothesis H13b cannot be rejected. It can be concluded that the results of the subsample of firms that have high and low family ownership are robust for an alternative proxy for family control.

Table 5.28: Regression results for subsamples of family-controlled board and Non-Family-Controlled board

Panel A: Number of family members on board > = 2			Panel B: Number of family members on board <2		Panel C: high family ownership level (Family ownership %>=30%)		Panel D: low family ownership level (Family ownership %<30%)	
Model (1) Random effects (GLS) regression			Model (2) Random effects (GLS) regression		Model (3) Random effects (GLS) regression		Model (4) Random effects (GLS) regression	
EMJ	**Coefficient**	**z-value**	**Coefficient**	**z-value**	**Coefficient**	**z-value**	**Coefficient**	**z-value**
SCGI	0.0000877	0.63	-0.0003961***	-2.64	0.0010618***	3.43	-0.0003252***	-3.11
FSZ	-0.0079843***	-4.22	-0.0003961	-0.29	-0.0002547	-0.05	-0.004791**	-2.39
LEV	0.0592783***	4.73	0.0167625	1.10	0.0202706	0.89	0.0419158***	3.56
ROA	0.0686181**	2.55	0.0323866	0.83	0.1841237***	3.31	0.0373933	1.37
BIG4	0.0075613**	2.26	-0.0055439	-1.19	0.0103263***	1.55	-0.000558	-0.17
LOSS	0.022226***	4.18	0.0070661	1.18	0.025398**	1.98**	0.0116657***	2.73
Constant	0.1267793***	4.87	0.0825951**	2.56	-0.0545593	-0.70	0.1249444***	4.74
Number of obs	572		422		173		821	
R-squared	43%		26%		55%		30%	
Chi-square	108.058		36.91		43.815		70.289	
Prob > chi2	0.000		0.0001		0.00		0.000	
Breusch-Godfrey LM test	29.569***		20.424*		21.769**		33.985***	
Breusch-Pagan test	60.48***		22.43***		5.35**		52.34***	
Hausman (1978) specification test	2.21		3.27		4.31		3.43	
Breusch and Pagan Lagrangian multiplier test for random effects	21.48***		12.53***		-	-		

Note: ***, ** and * denote significance at 1%, 5% and 10% levels, respectively. Chapter Four provides a detailed definition of the measurement of all the variables used for the estimation.

5.7.5 Additional tests

5.7.5.1 Results of non-strict independent directors and alternative measure for strict Board independence

In section 5.7.2, the study examined the effectiveness of strict board independent directors STRIND and strict audit independence index AUDINDEX in constraining earnings management practices. However, in this section, the effect of the non-strict independent director will be examined to see whether there are differences between strict and non-strict independent directors in constraining earnings management practices. In order to do this, the study will first examine the effect of non-strict independent directors in reducing earnings management practices and compare the results with strict independent directors . Second, it will examine alternative measures for strict board independence.

For this purpose, the study conducted four regressions, all of which were estimated as Equation 8 with some modifications. First, in Equation 9, strict independent directors STRIND was replaced with non-strict board independent directors BRDIND, which measures as the proportion of independent directors declared by the firms in their annual reports as independent directors to total board members. Second, in Equation 10, STRIND was replaced by Board independence index INDINDEX as an alternative measure of board independence. INDIINDEX is a disclosure independence index constructed for the independent directors on the board based on the 11 independence criteria recommended by the 2017 Saudi Corporate Governance Code. A value of 1 is assigned if the independent member meets one of the 11 independence criteria and 0 otherwise. The index score ranges from 1 to 11.

Also, in Equation 10 the audit independence index AUDINDEX was replaced by the independence of the audit committee variable AUDIND, measured by the proportion of independent directors on the audit committee as declared by the firms in their annual reports to total audit committee members. Third, in Equation 11, AUDINDEX was replaced by strict audit committee independent directors STRAUDIND, which measures the proportion of strict independent directors who meet all the independence criteria recommended by the 2017 SCGC on the audit committee to total audit committee members. Also, in Equation 11, STRIND was replaced by INDIINDEX to avoid possible collinearity between STRIND and STRAUDIND. Fourth, in equation (12), STRIND was replaced by BRDINDUM, which is measured as a dummy variable that takes the value of 1 if all the independent directors on

the board meet all the 11 independence criteria recommended by the 2017 Saudi Corporate Governance Code and 0 otherwise. Also, AUDINDEX was replaced by AUDIND to avoid collinearity between AUDINDEX and BRDINDUM.

$$EM_{it} = \alpha_0 + \beta_1 BRDIND_{it} + \beta_2 AUDINDEX_{it} + \beta_3 BRDSIZE_{it} + \beta_4 BRDMEET_{it} + \beta_5 AUDMEET_{it} + \beta_6 INTERLOCK_{it} + \beta_7 FAMMB_{it} + \beta_8 GOVOWN_{it} + \beta_9 INSTOWN_{it} + \beta_{10} FAMOWN_{it} + \beta_{11} BLOCKOWN_{it} + \beta_{12} FSZ_{it} + \beta_{13} LEV_{it} + \beta_{14} ROA_{it} + \beta_{15} BIG4_{it} + \beta_{16} LOSS_{it} + \varepsilon_{it} \quad (9)$$

$$EM_{it} = \alpha_0 + \beta_1 INDINDEX_{it} + \beta_2 AUDIND_{it} + \beta_3 BRDSIZE_{it} + \beta_4 BRDMEET_{it} + \beta_5 AUDMEET_{it} + \beta_6 INTERLOCK_{it} + \beta_7 FAMMB_{it} + \beta_8 GOVOWN_{it} + \beta_9 INSTOWN_{it} + \beta_{10} FAMOWN_{it} + \beta_{11} BLOCKOWN_{it} + \beta_{12} FSZ_{it} + \beta_{13} LEV_{it} + \beta_{14} ROA_{it} + \beta_{15} BIG4_{it} + \beta_{16} LOSS_{it} + \varepsilon_{it} \quad (10)$$

$$EM_{it} = \alpha_0 + \beta_1 INDINDEX_{it} + \beta_2 STRAUDIND_{it} + \beta_3 BRDSIZE_{it} + \beta_4 BRDMEET_{it} + \beta_5 AUDMEET_{it} + \beta_6 INTERLOCK_{it} + \beta_7 FAMMB_{it} + \beta_8 GOVOWN_{it} + \beta_9 INSTOWN_{it} + \beta_{10} FAMOWN_{it} + \beta_{11} BLOCKOWN_{it} + \beta_{12} FSZ_{it} + \beta_{13} LEV_{it} + \beta_{14} ROA_{it} + \beta_{15} BIG4_{it} + \beta_{16} LOSS_{it} + \varepsilon_{it} \quad (11)$$

$$EM_{it} = \alpha_0 + \beta_1 BRDINDUM_{it} + \beta_2 AUDIND_{it} + \beta_3 BRDSIZE_{it} + \beta_4 BRDMEET_{it} + \beta_5 AUDMEET_{it} + \beta_6 INTERLOCK_{it} + \beta_7 FAMMB_{it} + \beta_8 GOVOWN_{it} + \beta_9 INSTOWN_{it} + \beta_{10} FAMOWN_{it} + \beta_{11} BLOCKOWN_{it} + \beta_{12} FSZ_{it} + \beta_{13} LEV_{it} + \beta_{14} ROA_{it} + \beta_{15} BIG4_{it} + \beta_{16} LOSS_{it} + \varepsilon_{it} \quad (12)$$

Table 5.29: FGLS regression findings of the equilibrium-variable model for non-strict independent directors and alternative measures for Board independence

Model (1) EMJ	Coef.	Model (2) EMJ	Coef.	Model (3) EMJ	Coef.	Model (4) EMJ	Coef.
BRDIND	-0.0020194 (-0.50)	**INDINDEX**	-0.0004089 (-1.15)	**INDINDEX**	-0.0001321 (-0.38)	**BRDINDUM**	-0.0030854*(-1.74)
AUDINDEX	-0.0001732 (-0.83)	**AUDIND**	-0.0003342 (-0.14)	**STRAUDIND**	-0.0071612***(-2.81)	**AUDIND**	-0.001624 (-0.64)
BRDSIZE	-0.0023502*** (-4.87)	**BRDSIZE**	-0.0023129*** (-4.78)	**BRDSIZE**	-0.0021731*** (-4.51)	**BRDSIZE**	-0.0023715*** (-5.23)
BRDMEET	0.0017038 ***(4.06)	**BRDMEET**	0.0016236 ***(3.91)	**BRDMEET**	0.0015573*** (3.58)	**BRDMEET**	0.0016271*** (3.79)
AUDMEET	-0.0006286** (-2.38)	**AUDMEET**	-0.0005967**(-2.28)	**AUDMEET**	-0.0006529**(-2.44)	**AUDMEET**	-0.0006785** (-2.48)
INTERLOCK	-0.0038176 (-1.35)	**INTERLOCK**	-0.0034086(-1.18)	**INTERLOCK**	-0.00388 (-1.36)	**INTERLOCK**	-0.0038089 (-1.34)
FAMMB	-0.0021788 (-0.36)	**FAMMB**	-0.0024026(-0.40)	**FAMMB**	-0.0038515(-0.62)	**FAMMB**	-0.0044223 (-0.71)
GOVOWN	-0.0002922*** (-4.65)	**GOVOWN**	-0.0002686*** (-4.35)	**GOVOWN**	-0.0002892***(-4.74)	**GOVOWN**	-0.0002573***(-3.71)
INSTOWN	-0.0001891(-3.62)	**INSTOWN**	-0.0001813***(-3.55)	**INSTOWN**	-0.0001821***(-3.62)	**INSTOWN**	-0.0001739***(-4.46)
FAMOWN	-0.0000989*(-1.79)	**FAMILIY**	-0.0000792 (-1.42)	**FAMILIY**	-0.000079 (-1.43)	**FAMILIY**	-0.0000615 (-1.05)
BLOCKOWN	-0.0003254 (-1.20)	**BLOCKOWN**	-0.0003635(-1.38)	**BLOCKOWN**	-0.0004267(-1.52)	**BLOCKOWN**	-0.0002997(-1.14)
FSZ	-0.0062222***(-5.95)	**FSZ**	-0.0063182***(-6.09)	**FSZ**	-0.0062348***(-5.90)	**FSZ**	-0.0061219***(-6.01)
LEV	0.0432126*** (7.39)	**LEV**	0.0427374***(7.31)	**LEV**	0.0421177***(7.31)	**LEV**	0.0425296*** (7.41)
ROA	0.032694 ***(2.66)	**ROA**	0.0298491** (2.38)	**ROA**	0.0330751*** (2.66)	**ROA**	0.0340411***(2.66)
BIG4	0.006696*** (3.95)	**BIG4**	0.006684*** (4.15)	**BIG4**	0.0063914*** (3.95)	**BIG4**	0.0064515***(4.22)
LOSS	0.0083174*** (3.59)	**LOSS**	0.0081548***(3.42)	**LOSS**	0.0089941*** (3.89)	**LOSS**	0.0094202*** (3.94)
Constant	0.1384572*** (10.12)	**Constant**	0.1409141*** (10.51)	**Constant**	0.1386157***(10.16)	**Constant**	0.1365084***(10.34)
Number of obs	993		993		993		993
Wald chi2(16)	3317.48***		5043.19***		3508.73***		1658.51***
Prob > chi2	0.0000		0.0000		0.0000		0.0000

Notes: Variables are defined as follows: non-strict board independent directors (BRDIND): measured as the proportion of independent directors declared by the firms in their annual reports as independent directors to total board members. Strict Board of directors' independence index (INDINDEX): a disclosure independence index constructed for the independent directors on the board based on the 11 independence criteria recommended by the 2017 Saudi Corporate Governance Code. A value of 1 is assigned if the independent member meets one of the 11 independence criteria and 0 otherwise. The index score ranges from 1 to 11. Non-strict Audit committee independent directors (AUDIND): measured by the proportion of independent directors declared by the firms in their annual reports as independent directors to total audit committee members. Strict Audit committee independent directors (STRAUDIND): the proportion of strict independent directors who meet all the independence criteria recommended by the 2017 SCGC to total audit committee members. (BRDINDUM) a dummy variable that takes the value of 1 if all the independent directors on the board meet all the 11 independence criteria recommended by the 2017 Saudi Corporate Governance Code and 0 otherwise. Chapter Four provides a detailed definition of the measurement of the remaining variables used for the estimation. Z -value between parentheses. ***, ** and * denote significance at 1%, 5% and 10% levels, respectively.

Table 5.29 presents the results of non-strict board and audit independent directors and strict audit independent directors. Also, Table 5.29 presents the results of the alternative measures for strict board independence. In Table 5.29 Model (1), the coefficient of non-strict board independent BRDIND is negative but insignificant (b=-0.0020194) (z-value = -.050). This result indicates that the presence of independent directors who violate the independent criteria of the Saudi Corporate Governance Code is not effective in constraining earnings management practices. Also, this result is in line with this study's argument that measuring the independence of the board of directors by merely computing the percentage of independent directors declared by the firms might not reflect the actual status of their independence. Likewise, in Model (2), the coefficient of non-strict audit independent directors AUDIND is associated negatively but insignificantly with earnings management practices. This result indicates that independent directors on the audit committee who did not meet one of the 11 independence criteria are not effective in reducing earnings management practices. Similarly to these findings, Crespí-Cladera & Pascual-Fuster (2014) examined the effect of the proportion of non-strict independent directors on the board and non-strict independent directors on the audit committee (who do not meet the eight criteria of independence of their studies) on earnings management practices. The study found that none of these variables has a significant effect on reducing earnings management practices.

In addition, in Model (2), the coefficient of INDINDEX is negative but not significant for earnings management practices. This means that firms that have a high level of compliance with the independence criteria are not effective in reducing earnings management practices.

The results in Table 5.29 Model (3) show that the coefficient of strict audit independent directors STRAUDIND is negative and highly significant at 1% of significance. This result suggests that the proportion of independent directors on the audit committee who meet all the independence criteria is effective in constraining earnings management practices. Also, in Model (4), the coefficient BRDINDUM is negative (b=-0.0030854) and significant (z-value -1.74) at 10% level of significance. This result indicates that firms that have a board in which all its independent directors meet all 11 independence criteria are effective in reducing earnings management practices.

Overall, these results indicate that the proportion of strict independent directors on the board and audit committee is effective in monitoring opportunistic managerial discretion (i.e. earnings management practices). These findings prove the effectiveness of the 11

independence criteria recommended by the Saudi Corporate Governance Code in evaluating the independence of the independent director. Nevertheless, this result does not hold when the independence of the board is measured by the independence index.

5.7.5.2 The effect of the Corporate Governance Index on earnings management based on the direction of earnings management

In order to obtain more details of how the corporate governance mechanism affects earnings management practices and to investigate whether corporate governance plays a role in constraining both income increasing and income decreasing earnings management, the study's sample was split based on the direction of the earnings manipulation. Thus, the Saudi Corporate Governance Index was regressed separately on income increasing and income decreasing earnings management practices.

Table 5.30: Results of the Relation between the Corporate Governance Index and earnings management by the direction of earnings management

Panel A: Model (1) FGLS regression			**Panel B: Model (2) FGLS regression**	
Income-increasing			**Income-decreasing**	
EMJ Modified Jones Model (1995)	**Coefficient**	**z-value**	**Coefficient**	**z-value**
SCGI	-0.000193**	-2.13	0.0003003***	4.75
FSZ	-0.0093629***	-10.63	0.006366***	6.64
LEV	0.0620743***	10.16	0.0016252	0.24
ROA	0.086397***	4.33	0.0688328***	4.09
BIG4	-0.0014168	-0.97	-0.0037661 **	-2.02
LOSS	-0.0032618	-1.22	-0.0184512***	-6.22
Constant	0.1732956***	15.57	-0.1536704***	-11.74
Number of obs	489		476	
Chi-square	283.22		288.874	
Prob > chi2	0.000		0.00	
Breusch-Godfrey LM test	27.094***		33.228***	
Breusch-Pagan test	45.24***		29.78***	
Hausman (1978) specification test	12.75**		15.61**	

Note: ***, ** and * denote significance at 1%, 5% and 10% levels, respectively. Chapter Four provides a detailed definition of the measurement of all the variables used for the estimation.

The results in Table 5.30 Panel A suggest that SCGI seems effective in constraining income increasing earnings management practices. The coefficient of SCGI is negative (b=-0.000193) and significant (z-value =-2.13) at 5% level of significance in relation to income increasing earnings management practices. Income increasing earnings management is considered an aggressive financial reporting practice as described by Bekiris & Doukakis (2011). This is because firms engage in income increasing earnings management to avoid the negative consequences of decreasing the reported profit. For example, DeFond & Jiambalvo (1994) empirically documented that managers of firms with high leverage are motivated to engage in income increasing earnings management practices in order to avoid violation of debt covenants. the results in Panel A suggest the effectiveness of the corporate governance system in Saudi firms in constraining aggressive earnings management practices. Similarly to this finding, Bekiris & Doukakis (2011) found a negative and significant association between corporate governance provisions and income increasing earnings management practices.

On the other hand, the results in Table 5.30 Panel B show that the SCGI has a significant and positive (B= 0.0003003) (Z-value= 4.75) relationship with income decreasing earnings management practices; the coefficient is significant at 1% level of significance. The result implies that firms having strong corporate governance systems tend to engage more in income decreasing earnings management practices. Bekiris & Doukakis (2011) attributed this effect to the fact that income decreasing earnings management practices might be classified as a conservative accounting practice[34]. Therefore, when the firm has strong CG mechanisms, they tend to be conservative in reporting profit and avoid causing any inaccurate inflation in the profit, which may lead to manipulation. There is a wide range of evidence in the literature demonstrates that the CG mechanism increases the use of conservative accounting practices of (Lim, 2011; García Lara et al., 2009). In line with this argument, García Lara et al. (2009) documented that strong governance firms (measured by a governance index) show significantly higher levels of accounting conservatism. Also, they find that well-governed firms appear to use income decreasing earnings management practices to notify investors about bad news in a timelier manner.

[34] Conservative accounting practices imply adopting accounting practices that lead to a decrease in the reported profit and taking into consideration any possible risk that may affect the profitability of the company (Lim, 2011).

5.7.6 Endogeneity Problem

Endogeneity is considered a serious problem in econometrics (Baltagi, 2008). It occurs when one of the independent variables (x) or all of them in the regression are correlated with the error term (e) (Baltagi, 2008). From a statistical perspective, the correlation between the independent variables (x) and the error term (e) in the model means that the random variation of x and e are correlated with each other, and both are affecting y (the dependent variable) at the same time (Heij et al., 2004). Consequently, it would be difficult to isolate the effect of x on the outcome of dependent variable y because the variation of independent variable x is affecting the variation of dependent variable y from two directions (Baltagi, 2008; Heij et al., 2004). This happens first, directly through the changes of the x, and second, indirectly through the variations of the error term (Heij et al., 2004). Thus, the endogeneity problem affects the estimates of the parameters of the usual OLS model, making them inconsistent (Heij et al., 2004). There are several factors that give rise to the endogeneity problem, such as variables omission, measurement error and simultaneity (Baltagi, 2008; Saona et al., 2020).

First, several studies in the governance literature have pointed out the problem of omission of essential and relevant governance factors in measuring and constructing a governance index (Larcker et al., 2007; B. Black et al., 2017; Black et al., 2012). This might occur due to the unavailability of data or the difficulty of proxying for a certain governance provision (B. Black et al., 2017). For example, studies usually tend to proxy for the independence of the board of directors by computing the percentage of independent directors who sit on the board (Saona et al., 2020; Rahman & Ali, 2006; Katmon & Farooque, 2017). In this regard, Baker & Anderson (2011) argue that this measure might not be accurate since not all independent directors have a similar level of independence; their independence might be negatively affected by other factors in the firms. In the same vein, Black et al. (2006) argue that managers might appoint independent directors merely to signal to the outside investors that they adopt good governance practices that in line with the investors' interests. However, in practice, those independent directors might not provide effective monitoring and disciplining of the managers (Black et al., 2006). In this case, the concept of board independence will be incorrectly measured and will suffer from omitted variables bias since an important factor, namely the managerial intentions in appointing the independent directors, was not included in the proxy of the board's independence. This might be due to the difficulty of finding a proper measurement for it. Given this, the Saudi Corporate Governance Index (SCGI) that is used in this study might also suffer from omitted variable

bias since there are governance factors that might correlate with the current governance provisions in the index but have not been accounted for by the researcher. This might increase the possibility of the SCGI becoming an endogenous variable.

Second, another problem that might cause endogeneity is the measurement error of the governance variables. Baker & Anderson (2010) and Daines et al. (2010) claim that the governance index is expected to contain more measurement error than a single governance variable. According to Baker & Anderson (2010), using single governance characteristics such as the board's stock ownership might contain lower measurement error because it involves recording one value. However, the governance index has numerous governance provisions which cover different governance aspects. Hence, the chance of making mistakes in recording these values is higher than in single governance provision. Consequently, higher measurement error affects the accuracy of the calculation of the overall proxy of the governance practices (Baker & Anderson, 2010). Thus, it will render the measure of the governance index invalid.

Nevertheless, the measurement error in the governance index is not only related to mistakes in recording the governance values. Schnyder (2012) argues that the measurement error could also arise from the inherent limitations of constructing a governance index. First, this measurement error could be occurred due to including any governance provision in the index without theoretical justification for including them (Brown et al., 2011; Schnyder, 2012) since the literature lacks a theory in this regard (Al-Najjar & Al-Najjar, 2017; Baker & Anderson, 2010b; Scholtz & Smit, 2015; Brown et al., 2011). Second, the weighting of each provision in the index is not justified due to the absence of a theoretical guide (Brown et al., 2011; Schnyder, 2012). Therefore, as this study used a governance index that contained 142 provisions and collected the governance data manually, there is a high possibility that a measurement error may occur. This, in turn, might make the SCGI variable endogenous.

Third, simultaneity arises when the independent variables are also determined by the dependent variable (Baltagi, 2008). In the context of this study, the earnings management practice could drive the variations of the governance variables. For example, Ye (2014) argues that firms involved in earnings management practices might appoint more experienced independent directors in the board in order to mitigate the negative effect of earnings management practices as well as the information asymmetry between the managers and the outside shareholders. Lee & Hwang (2019) hold the same view, arguing that when earnings management practices become prevalent in the firms, the compensation committee

reacts to this by designing a compensation structure with more inside debt compensation, on the ground that inside debt is effective in constraining earnings management practices. Hence, it is expected that the SCGI could be determined by the dependent variables, that is, the earnings management practices.

In order to address the endogeneity problem in this research, this study applied two-stage least squares (G2SLS) regression and an instrumental variable for the compliance index model. This technique has been widely used in the governance literature by prior studies (Ntim, Opong, & Danbolt, 2012; Ntim et al., 2013; Elghuweel et al., 2016; Katmon & Farooque, 2017). For the equilibrium-variable model (EVM), the Lagged Structure model was applied to address the problem of endogeneity.

5.7.6.1 Results of the Compliance-Index Model based on two-stage least squares (G2SLS) regression and Instrumental Variable (IV)

As discussed in section 5.7.6, this study addresses the endogeneity problem in this research by applying two-stage least squares (G2SLS) regression and an instrumental variable for the compliance index model. The researcher has built an instrument for the Compliance-Index Model because the Saudi Corporate Governance Index (SCGI) is the main interest of this study.

In line with prior studies (Katmon & Farooque, 2017; Al-Okaily et al., 2020; Ntim, Opong, & Danbolt, 2012; Ntim et al., 2013), the Durbin-Wu-Hausman exogeneity test was applied first to test for the existence of an endogenous relationship between SCGI and EM, as applied to Equation 7.

The significant results of the Durbin-Wu-Hausman exogeneity test in Table 5.31 indicate that the null hypothesis of no endogeneity is rejected at 5% level of significance. This implies that SCGI variable is endogenous variable, and the findings from the main GLS random effect model presented in in Table 5.19 might be biased and inconsistent. Hence, G2SLS random-effect Instrumental variable regression should be adopted for the analysis.

Table 5.31: The Durbin-Wu-Hausman test for endogeneity for the compliance index model

Durbin (score) chi2(1)	4.65523** (p = 0.0310)
Wu-Hausman F (1,986)	4.63949** (p = 0.0315)

***, ** and * denote significance at 1%, 5% and 10% levels, respectively.

Hence, the Instrumental variable for endogenous variables (SCGI) in Equation 7 was done in the first stage based on theoretical and empirical prior research (Roberts et al., 2005; Fama & Jensen, 1983; Jensen & Meckling, 1976; Elmagrhi et al., 2016; Carcello et al., 2002; Ntim, Opong, Danbolt et al., 2012; Ali et al., 2007). This study assumed that SCGI is determined by eight governance mechanisms and five control variables. The governance factors are the strict independence of board members (STRIND), strict independence of audit committee members (STAUDIND), board size (BRDSIZE), board meeting (BRDMEET), audit meeting (AUDMEET), family ownership (FAMOWN), government ownership (GOVOWN), and institution ownership (INSTOWN). The control variables are firm size (FSZ), leverage (LEV), return on assets (ROA), audit quality (BIG4) and loss (LOSS). In the following section, the effect of each governance variable on the disclosure of the corporate governance index (SCGI) will be discussed.

Strict independent directors (STRIND)

Agency theory is built on the assumption that managers are opportunistic, and their self-serving behaviour will result in divergence of interests in the principal-agent relationship. Thus, agency theory suggests that the corporate governance mechanism might be an effective monitoring strategy which helps in curbing the opportunistic behaviour of the agent and mitigating the agency problem (Hoque, 2006; Fama & Jensen, 1983; Haniffa & Hudaib, 2006; Bonazzi & Islam, 2007; Peasnell et al., 2005; Abdul Rahman & Haneem Mohamed Ali, 2006). This is because corporate governance mechanisms provide a monitoring role over management activities. According to Samaha et al. (2012), disclosure of the governance practices by the firms will help in decreasing the agency cost and the information asymmetry between investors and managers. Also, it will make the financial reports more credible to investors. Cormier et al. (2010) support this argument and have empirically documented that governance disclosure complements the governance mechanism in the firms, and they collectively work to reduce the information asymmetry between managers and investors.

Thus, agency theory suggests that the board of directors should be independent from the management in order to provide adequate monitoring and prevent managerial opportunism (Roberts et al., 2005; Fama & Jensen, 1983; Jensen & Meckling, 1976). In this regard, it is expected that independent board members would increase compliance with CG provisions in Saudi firms, and therefore, that STRIND will be positively associated with SCGI (Elmagrhi et al., 2016).

Strict independence of audit committee members (STAUDIND)

From the agency theory perspective, the audit committee might contribute to reducing the agency cost, particularly if it includes independent directors among its members (Samaha et al., 2012). This stems from the role of the audit committee in the governance structure of the company. The role of the audit committee is to supervise the process of financial reporting, evaluate the internal control systems of the firm, and ensure that the external auditor is capable of detecting any manipulation in financial reporting (Felo et al., 2005; Klein, 2002). Therefore, the presence of independent audit committee members can enhance the level of corporate governance disclosure (Carcello et al., 2002). This study hypothesised a positive association between the strict independence of audit committee members STAUDIND and compliance with Saudi corporate governance provisions SCGI.

Audit meeting (AUDMEET) and Board meeting (BRDMEET)

According to Klein (2002), monitoring of financial reporting by the audit committee can be achieved by conducting frequent meetings with the internal financial managers and external auditors in order to review the external audit procedures, financial statements and internal control statute in the firms. Therefore, it is expected that Audit meeting AUDMEET and Board meeting BRDMEET will be associated positively with the disclosure of governance practices SCGI.

Board size (BRDSIZE)

According to B Xie et al. (2003) and Abed et al. (2012), larger boards are expected to provide effective monitoring functions. This is because larger boards increase the possibility of the company having more members with varied experience of financial reporting issues (Beasley & Salterio, 2001). Also, from an agency theory point of view, the larger board will

be more vigilant in capturing any agency problem that may arise, because a high number of members will be observing managers' activities (Kiel & Nicholson, 2003). Ntim, Opong, Danbolt et al. (2012) documented that firms with larger board size have a high level of voluntary governance disclosure. Therefore, it is expected that a larger board size BRDSIZE will associate positively with the level of compliance with the provisions of the Saudi Corporate Governance Code (SCGI).

Family ownership (FAMOWN)

The entrenchment hypothesis suggests that controlling family ownership have incentives to engage in opportunistic behaviour at the cost of minority shareholders to obtain private benefits that are not distributed to other minority shareholders (Wang, 2006; Shleifer & Vishny, 1997). Thus, family ownership may reduce the disclosure of governance practices (Vural, 2018). In this regard, Ali et al. (2007) found that family firms in the US are less likely to disclose their governance practices in order to reduce the ability of outside shareholders to interfere in the firm. On the basis of this discussion, this study hypothesised that there is a negative relationship between family ownership FAMOWN and SCGI.

Government Ownership (GOVOWN)

The Saudi government provides financial support to listed firms (AL-Dakhil, 2017). According to Al-Bassam et al. (2015), Saudi firms that have substantial government ownership might improve their governance practices in order to gain government support. Yet, in line with Saudi Vision 2030, one of the aims of which is to develop the financial sector in Saudi, established several incentives programs to facilitate the operations of the listed firms, and also to encourage private firms to be listed on the Saudi stock exchange (Tadawul.com,2020). For example, the Saudi Industrial Development Fund has increased the limits of loans granted to listed firms (Tadawul.com,2020). Therefore, Saudi firms that have government ownership might increase their compliance with the Saudi Corporate Governance Code in order to obtain government support. Al-Bassam et al. (2015) found that government ownership affects positively the compliance with voluntary corporate governance disclosure in Saudi firms. Thus, this study predicts that government ownership GOVOWN will be associated positively with SCGI.

Institutional ownership (INSTOWN)

Institutional shareholders have the ability and incentive to effectively monitor the practices of the management. Due to the high number of shares that they own, collective action by institutional investors becomes less costly. As they are a small number of shareholders, they can easily form a homogeneous group (Koh, 2003). This, in turn, will enable them to undertake the monitoring role and share the monitoring expenses as well (Koh, 2003). In addition, institutional shareholders are a sophisticated group of shareholders who possess wider skills and financial experience. Thus, they tend to require a large amount of information from the managers of the firms (Donnelly & Mulcahy, 2008). Elmagrhi et al. (2016) found that the presence of institutional shareholders in the firms increases corporate governance disclosure. Hence, the study predicts a positive effect of institutional shareholders INSTOWN on SCGI.

Firm size (FSZ)

Larger firms are more likely to provide more transparent corporate governance disclosure (Samaha et al., 2012). This is because larger firms are more likely to be subject to financial and political costs (Watts & Zimmerman, 1986). Also, larger firms tend to have well-established internal control systems and more skilled internal auditors than small firms, which in turn contributes to the quality of the disclosed information (Kim et al., 2003; Cormier et al., 2013; Sáenz González & García-Meca, 2014). Hence, the study predicts that firm size FSZ will correlate positively with SCGI.

Leverage (LEV)

Creditors of the firms, such as banks, consider one of the methods of governance (Shleifer & Vishny, 1997). As the creditors finance the firm, they are motivated to supervise the behaviour of the managers in order to ensure that firms maintain payment of the principal and the interest (Jensen C., 1986). In addition, creditors mitigate the agency problem in the firms by constraining the availability of cash flow to the managers, since the cash flow will be directed towards paying the debts (Jensen C., 1986). However, creditors supervise the firms by establishing a debt covenant (Jensen & Meckling, 1976). For instance, they tend to use specific accounting numbers in the debt contracts in order to restrict the managers' ability to take decisions that may reduce the value of the firms. For example, some debt contracts

require the firms to maintain working capital above a certain level (Watts & Zimmerman, 1986; Jensen & Meckling, 1976). Breach of debt covenants is considered a default. In this case, lenders will have the right to take action against the firms, such as seizure of collateral (Watts & Zimmerman, 1986). Creditors might also have the right to take the firms to bankruptcy court if they fail to pay off their debts (Jensen C., 1986). Since debt can be used as a governance method, empirically Perez de Toledo & Bocatto (2012) found that they can be used as a substitute governance method for other governance arrangements that could be complex or costly for the firm. Thus, it is expected that firms with high leverage will comply less with recommendations of the governance code. In this regard, Cormier et al. (2010) argue that when the firms have financial difficulties (have a high debt ratio), they might not benefit from increasing the disclosure of their governance practices. Several studies in the literature report a negative relationship between leverage and disclosure of governance practices (Eng & Mak, 2003; Sharif & Ming Lai, 2015; Perez de Toledo & Bocatto, 2012). Hence, this study predicts that the coefficient of leverage LEV will be associated negatively with disclosure of governance practices in Saudi firms SCGI.

Return on assets (ROA) and loss (LOSS).

Kusumawati (2006) and Abdur Rouf (2011) found that the level of financial performance is associated negatively with disclosure of governance practices. Kusumawati (2006), interpreting this result, by stating that that this occurs because firms that have experienced a reduction in revenue tend to disclose more about their governance practices to the public. This is to distract the attention of outside investors from the firm's poor performance and to signal to them that it is still well-governed. These findings are also in line with 'light and shadow management theory' (Jackson & Carter, 1995), which states that that managers shed light on their corporate governance practices by increasing their disclosure in order to hide their low financial performance in the shadows. In line with this argument, firms that experience losses might also increase their governance disclosure practices in order to cover up their reported losses. Hence, according to this discussion, the study hypothesised that financial performance ROA and LOSS variables will negatively affect disclosure of governance practices in Saudi firms.

Audit quality (BIG4)

Firms that have high audit quality services are expected to provide more transparent information (Al-Janadi et al., 2013; Han et al., 2012). This is because large audit firms (a proxy of audit quality) spend generously on building their brand names, lowering the litigation risk and protecting their reputation (Palmrose, 1988). The reason for this is that audit firms gain their value from the expectations of the users of the financial statement that the audit firms could detect and report any material misstatements and omissions in the company's financial statements. Yet, if the audit firms do not meet this expectation, the result is audit failure. The audit failure will affect the users of the financial statements, possibly leading them to take legal action against the audit firms (litigation) (Palmrose, 1988). Palmrose (1988) and DeAngelo (1981) suggest that large audit firms have an incentive to avoid the risk of litigation by providing high-quality audit services, because litigation is very costly for them. Therefore, due to the possible loss (i.e., litigation risk and reputation loss) that large audit firms may face if they have not provided proper audit services, it is expected that firms employing one of the big 4 accounting firms will have high-quality governance disclosure. Empirically, several studies in the literature provide evidence that audit quality improves disclosure of governance practices (Al-Janadi et al., 2013; Han et al., 2012). For instance, based on a sample of 87 Saudi listed firms, Al-Janadi et al. (2013) reported that several governance mechanisms such as non-executive directors, board size and audit quality significantly improve voluntary disclosure. Hence, this study anticipated that audit quality (BIG4) will be positively associated with disclosure of governance practices in Saudi firms SCGI.

Therefore, the first stage regression is estimated as follows:

$$SCGI_{it} = \alpha_0 + \beta_1 STRIND_{it} + \beta_2 STAUDIND + \beta_3 BRDSIZE_{it} + \beta_4 BRDMEET_{it} + \beta_5 AUDMEET_{it} + \beta_{10} FAMOWN_{it} + \beta_8 GOVOWN_{it} + \beta_9 INSTOWN_{it} + \beta_{12} FSZ_{it} + \beta_{13} LEV_{it} + \beta_{14} ROA_{it} + \beta_{15} BIG4_{it} + \beta_{16} LOSS_{it} + \varepsilon_{it} \quad (13)$$

The variables of Equation 13 are defined in Table 5.22. and Table 5.29.

Table 5.32: First stage OLS regression

Dependent variable	Coef.	St. Err.	t-value
SCGI			
Independent variables			
STRIND	15.77194***	2.051	7.69
STAUDIND	3.966883**	1.868	2.12
BRDSIZE	0.6706057 *	0.345	1.94
BRDMEET	0.2283246	0.195	1.17
AUDMEET	2.312388***	0.132	17.55
FAMOWN	- 0.1081599**	0.045	-2.39
GOVOWN	0.3317329	0.022	1.50
INSTOWN	-0.1563131***	0.054	-2.88
Control variables			
FSZ	14.51468***	1.197	12.13
LEV	-19.58353***	3.522	-5.56
ROA	-32.79071***	7.071	-4.64
BIG4	-0.4795163	0.768	-0.62
LOSS	0.0328828	1.004	0.03
Constant	-163.0433***	16.628	-9.81
Adj.R-squared	57%		
Number of obs	994		
F-test	89.898***		

Note: ***, ** and * denote significance at 1%, 5% and 10% levels, respectively. Chapter Four provides a detailed definition of the measurement of all the variables used for the estimation.

As can be seen from Table 5.32, the majority of the coefficients are statistically significant and consistent with the study's prediction. This means that most of the variables selected in the model work as determinants of governance disclosure in Saudi firms.

Table 5.32 shows positive coefficients of SCGI on STRIND, STAUDIND, BRDSIZE, AUDMEET and FSZ, whereas the coefficient of SACGI is negatively associated with FAMOWN, LEV and ROA. Most of the coefficients are in line with the predicted sign and the regression shows good regression diagnostics, including high Adj.R-squared value (57%) and the F-test (89.898) (Gujarati, 2003). Hence, it can be suggested that the P_SCGI (i.e., the instrumented part of SCGI) is an appropriate instrument for SCGI.

However, Larcker & Rusticus (2010) criticise previous studies in accounting literature because they did not report the over-identifying restriction test for the instrumental variables used in their studies. Larcker & Rusticus (2010) states that not performing the over-identifying restriction test makes the assessment of the instrument's validity very difficult. Hence, the study followed prior studies (Ye, 2014; Choi et al., 2013; Baltagi, 2008; Heij et al., 2004) and conducted the Sargan test to examine whether the instrument of this study is valid and correctly specified. The null hypothesis of the test states that the instrument is exogenous and valid (Heij et al., 2004). In Table 5.33, the results of the Sargan test are not significant, which confirms the acceptance of the null hypothesis. Thus, the instrument used in this study is valid and well specified.

Table 5.33: Test of overidentifying restrictions

Sargan-Hansen statistic	Chi-sq(7) 9.159, P-value = 0.2414

Note: ***, ** and * denote significance at 1%, 5% and 10% levels, respectively.

After estimating the first step regression model in Equation 13, the predicted value P_SCGI(the instrumental variable) is obtained. Then SCGI in the main regression model in Equation 7 is replaced by P_SCGI . In the second step, the main model Equation 7 is re-estimated using the instrumental variable P_SCGI instead of SCGI as follows:

$$EMJ_{it} = \alpha_0 + \beta_1 P\_SCGI_{it} + \beta_2 FSZ_{it} + \beta_3 LEV_{it} + \beta_4 ROA_{it} + \beta_5 BIG4_{it} + \varepsilon_{it} \quad (14)$$

All the variables remain the same as defined in Equation 7 except the predicted value (P_SCGI), which comes from Equation 13 as an instrument for SCGI.

Table 5.34: Regression results of the estimated instrumental variable for the compliance-index model (Modified Jones Model, 1995)

Independent variables	Panel A: Second stage G2SLS random-effect instrumental variable (IV) regression EMJ	Panel B: Main GLS random-effect model EMJ
P_SCGI	-0.0002589* (-169)	-----
SCGI	----	-0.0002171** (-2.18)
FSZ	-0.0077616*** (-4.31)	-0.0079818*** (-5.06)
LEV	0.0458848*** (4.27)	0.0452864*** (4.46)
ROA	0.0444647* (1.74)	0.0426423* (1.77)
BIG4	0.0013799 (0.47)	0.0021099 (0.73)
LOSS	0.0134265*** (3.29)	0.0132902*** (3.29)
Constant	0.1550799*** (6.52)	0.1556693*** (7.30)
R-squared	0.18	0.18
Number of obs	994	994
Chi-square	46.972***	54. 367***
Prob > chi2	0.0000	0.0000

Note: Z -value between parentheses ***, ** and * denote significance at 1%, 5% and 10% levels, respectively. Chapter Four provides a detailed definition of the measurement of all the variables used for the estimation.

Table 5.34 compares the results of the main random-effect GLS regression for compliance index model and the regression of G2SLS random-effect instrumental variable (IV) regression. The G2SLS findings in Panel A are consistent with the random-effect GLS findings documented previously (Panel B). Accordingly, endogeneity does not seem to excessively impact on the findings of this study. The coefficients of the Saudi governance index (SCGI and P_SCGI) in both regressions in Panel A and B are negative and significant. This indicates that a higher level of corporate governance compliance (as measured by the governance index score) is associated with a lower level of earnings management practices measured by the Modified Jones Model (1995). However, there is a slight difference in the significance degree between the SCGI coefficient and the instrumented variable P_SCGI, in which the former is significant at 5% while the latter is significant at 10%. However, this does not affect the results, as both of them are significant and their predicted signs, are in line with the hypothesis of this study. In addition, the slight increase in the magnitude of the coefficient of the instrument variable P_SCGI (-0.0002589) in Table 5.34 Panel A compared with the coefficient of the SCGI (-0.0002171) in the main random-effect GLS random regression in Panel B is generally in line with prior findings of Ntim et al. (2012)and Elghuweel et al. (2016), which show that the instrumented part of the corporate governance

variable is stronger in predicting the outcome variable in the model than the original corporate governance variable (i.e. un-instrumented part).

The results of the control variables in the main random-effect GLS model Panel B are very similar to the findings of the control variables in G2SLS model in Panel A. The coefficients of the control variables FSZ, LEV, BIG4 and ROA show a similar direction and the same degree of significance as the coefficients of control variables in G2SLS regression panel A. Also, both regressions have the same R-squared value (18%).

Table 5.35: Results of the Compliance-Index Model based on two-stage least squares (G2SLS) regression and Instrumental Variable (IV) estimated based on alternative earnings management models (EMKOTH, WCAEM)

Independent variables	Panel A: Second stage G2SLS random-effect instrumental variable (IV) regression Dependent Variable: EMKOTH	Panel B: The GLS random-effect model EMKOTH	Panel C: Second stage G2SLS random-effect instrumental variable (IV) regression WCAEM	Panel D: The GLS random-effect model WCAEM
	Coef. z-value	Coef. z-value	Coef. z-value	Coef. z-value
P_SCGI	-0.0002711** -1.99	-----	-0.0011085*** -4.28	---
SCGI	-----	-0.0001861** -2.11	-----	-0.0010704*** -6.58
FSZ	-0.0051025*** -3.41	-0.0054867*** -4.11	0.0018956 0.95	0.0019026 1.05
LEV	0.0252131*** 2.73	0.0262622*** 3.00	-0.0370573*** -2.61	-0.0386805*** -2.89
ROA	0.0038609 0.17	0.0086487 0.41	-0.0074093 -0.21	-0.0172678 -0.53
BIG4	0.0049299* 1.92	0.0055172** 2.19	0.0080858* 1.86	0.0090608 ** 2.16
LOSS	0.0022606 0.63	0.0025758 0.72	0.0172228*** 2.70	0.0177212 *** 2.83
Constant	0.1205653*** 6.08	0.1201127 *** 6.65	0.103965*** 3.77	0.1017438*** 4.11
R-squared	17%	17%	13.34%	15%
Number of obs	994	994	994	994
Chi-square	26.069***	30.670***	34.478***	61.689***

Note: ***, ** and * denote significance at 1%, 5% and 10% levels, respectively. Chapter Four provides a detailed definition of the measurement of all the variables used for the estimation.

5.7.6.2 Results of the Compliance-Index Model based on two-stage least squares (G2SLS) regression and Instrumental Variable (IV) estimated based on alternative earnings management models

In order to test whether endogeneity affects the stability of the results based on different earnings management models, the instrumental variable two-stage regression (G2SLS) for SCGI was applied to the alternative earnings management models. Table 5.35 presents the results of the main Random-effect GLS regression for the compliance index model and the regression of G2SLS Random-effect instrumental variable (IV) regression where earnings management (dependent variables) is estimated by Kothari (2005) (EMKOTH) and working

capital accrual of the Modified Jones Model (1995) (WCAEM). Noticeably, the results of two-stage regression G2SLS in Panels A and C are generally similar to the findings of the main GLS Random-effect regressions in Panels B and D. In Panels A and B when the two regressions are estimated by EMKOTH, the coefficient of the instrument variable P_SCGI in Panel A remains negative and significant (-0.0002711) (z-value =-1.99), similar to the coefficient of SCGI of the main GLS Random-effect model in Panel B. Moreover, in Panel C, the coefficient P_SCGI in G2SLS regression estimated by WCAEM is negative and highly significant, similar to the coefficient of SCGI in the main Random-effect GLS model in Panel D. Hence, it can be concluded that the effect of the corporate governance (SCGI) on constraining earnings management is robust for alternative earnings management measures .

5.7.6.3 Results of the equilibrium-variable model estimated based on Lagged Structure

Following prior studies (Katmon & Farooque, 2017; Al-Okaily et al., 2020; Ntim, Opong, & Danbolt, 2012; Ntim et al., 2013), to ensure that the endogeneity problem is present in the equilibrium-variable model, the Durbin-Wu-Hausman exogeneity test was conducted to examine whether there is an endogenous relationship between corporate governance variables and earnings management applied to Equation 8.

Table 5.36: the Durbin–Wu–Hausman test for endogeneity for the equilibrium-variable model

Durbin (score) chi2(16)	30.6462 ** (p =0.0149)
Wu–Hausman F (16,848)	1.91009 **(p = 0.0167)

Note: ***, ** and * denote significance at 1%, 5% and 10% levels

The results in Table 5.36 show that the null hypothesis of no endogeneity is rejected at 5% level of significance. This result indicates that all the governance and control variables in the equilibrium-variable model are endogenous. Thus, the study solves the endogeneity in the equilibrium-variable model between corporate governance variables and earnings management by regressing Equation 8 as a lagged structure. The lag structure is used because previous year corporate governance practices might influence current earnings management practices. In line with this argument, Ye (2014) empirically provides evidence that previous year independent director cash pay is positively associated with current earnings management practices.

However, in order to estimate the lag model, a one-year lag is included between EMJ and all corporate governance variables and control variables as well, in which the current year's earnings management practices depend on the previous year's corporate governance practices. Therefore, this sample excluded 2006 as the first year, thereby reducing the entire sample from 993 to 871 observations.

Hence, the lag structure model is specified as follows:

$$EM_{it} = \alpha_0 + \beta_1 STRIND_{it-1} + \beta_2 AUDINDEX_{it-1} + \beta_3 BRDSIZE_{it-1} + \beta_4 BRDMEET_{it-1} + \beta_5 AUDMEET_{it-1} + \beta_6 INTERLOCK_{it-1} + \beta_7 FAMMB_{it-1} + \beta_8 GOVOWN_{it-1} + \beta_9 \mathrm{INSTOWN}_{it-1} + \beta_{10} \mathrm{FAMOWN}_{it-1} + \beta_{11} \mathrm{BLOCKOWN}_{it-1} + \beta_{12} \mathrm{FSZ}_{it-1} + \beta_{13} \mathrm{LEV}_{it-1} + \beta_{14} \mathrm{ROA}_{it-1} + \beta_{15} \mathrm{BIG4}_{it-1} + \beta_{16} \mathrm{LOSS}_{it-1} + \varepsilon_{it-1} \quad (15)$$

All the variables in Equation 15 are defined in Table 5.22.

Table 5.37: FGLS regression findings of the equilibrium-variable model (EVM) estimated as lagged structure

Dependent variable	**Panel A Lagged structure regression**		**Panel B Un-lagged structure regression**	
EMJ	**FGLS regression findings of EVM based on Modified Jones Model (1995)**		**FGLS regression findings of the EVM based on Modified Jones Model (1995)**	
Independent variables	**Coef.**	**z-value**	**Coef.**	**z-value**
STRIND	-0.0088291**	-2.50	-0.0115822***	-2.92
AUDINDEX	0.0005395***	2.85	-4.92e-07	-0.00
BRDSIZE	-0.0016501***	-3.31	-0.0024588***	-5.37
BRDMEET	0.0008957*	1.79	0.0014476***	3.46
AUDMEET	-0.0003674	-0.95	-0.0007**	-2.56
INTERLOCK	-0.0126538***	-3.93	-0.0026444	-0.94
FAMMB	0.0123434**	2.07	-0.0018325	-0.30
GOVOWN	-0.0002162***	-3.92	-0.0002793***	-4.52
INSTOWN	-0.0002104***	-4.46	-0.0001971***	-3.65
FAMOWN	-0.0000966**	-1.97	-0.0000901*	-1.65
BLOCKOWN	-0.0000569	-0.22	-0.0004015	-1.47
FSZ	-0.0051906***	-6.28	-0.0059545***	-5.78
LEV	0.0383001***	7.93	0.0414319***	7.29
ROA	0.0045613	0.40	0.0335956***	2.67
BIG4	0.0109389***	6.67	0.0063868***	3.98
LOSS	0.0073309***	3.30	0.0100754***	4.24
Constant	0.1145993***	11.17	0.1368032***	10.17
Chi-square	553.581***		2609.989***	
Number of obs	871		993	

Note: ***, ** and * denote significance at 1%, 5% and 10% levels, respectively. Chapter Four provides a detailed definition of the measurement of all the variables used for the estimation.

Table 5.37 Panels A and B compare the results of the lagged and the unlagged structure of the FGLS regression model; the results across the two models are relatively constant. Regarding governance variables, the coefficient of the strict independence of board members (STRIND) is negative and significant in both lagged and unlagged structure models. Also, board size BRDSIZE and board meeting BRDMEET show the similar predicted sign and level of significance. Surprisingly, in the lagged structure model Panel A, the independence of the audit committee AUDINDEX shows opposite hypothesised signs and is statistically significant. Also, in the lagged structure model Panel A, the coefficient of the INTERLOCK is significant and negative in relation to earnings management practices. All the results for ownership and control variables in the lagged regression were generally similar to those reported for unlagged structure in Panel A, thereby indicating that the results of the equilibrium-variable model are robust for estimating it as a lagged structure.

5.7.6.4 Results of the role of family ownership in the relationship between SCGI and EM for the Compliance-Index Model based on two-stage least squares (G2SLS) regression and Instrumental Variable (IV)

Since the coefficient of corporate governance index SCGI is endogenous (see section 5.7.6.1), the study utilised G2SLS random-effect regression. Then, the predicted value P_SCGI from the first stage regression in Equation 13 was used as an instrument for SCGI, in order to solve the issue of endogeneity for the random GLS regressions which were conducted for each subsample that divided based on the level of family ownership in the Saudi firms.

Table 5.38: Regression results of subsamples of family-controlled firms based on two-stage least squares (G2SLS) regression and Instrumental Variable (IV)

	Panel A: High family ownership level (Family ownership %>= 30%) Second stage G2SLS random-effect instrumental variable (IV) Regression with the Modified Jones Model (1995)		**Panel B: High family ownership level (Family ownership %>=30%) Main GLS random-effect model with the Modified Jones Model (1995)**	
EMJ	**Coefficient**	**z-value**	**Coefficient**	**z-value**
P_SCGI	0.0015426***	3.17	----	----
SCGI	----	------	0.0010618***	3.43
FSZ	-0.0009293	-0.13	-0.0002547	-0.05
LEV	0.0221326	0.82	0.0202706	0.89
ROA	0.221902***	3.31	0.1841237***	3.31
BIG4	0.0115784	1.50	0.0103263***	1.55
LOSS	0.0311022**	2.40	0.025398**	1.98
Constant	-0.079524	-0.87	-0.0545593	-0.70
R-squared	55%		55%	
Number of obs	173		173	
Chi-square	32.55***		43.815***	
Prob > chi2	0.0006		0.00	

Note: ***, ** and * denote significance at 1%, 5% and 10% levels, respectively. Chapter Four provides a detailed definition of the measurement of all the variables used for the estimation.

Table 5.38 compares the results obtained from G2SLS random-effect instrumental variable (IV) model and main GLS random-effect model for subsample of firms that have high family ownership. The results show an enormous similarity between the two models. In a subsample of high-level family ownership, the coefficient of the SCGI in Panel B and the instrument P_SCGI in Panel A are both positive and significant. This indicates that after controlling for endogeneity bias when firms have a high level of family ownership, the increase in compliance with Saudi corporate governance provisions leads to an increase in the practices of earnings management. The coefficients of the control variables also had similar predicted signs and degrees of significance.

Table 5.39: Regression results of subsamples of family-controlled firms based on two-stage least squares (G2SLS) regression and Instrumental Variable (IV)

	Panel A: Panel A: low family ownership level (family ownership % <30%), Second stage G2SLS random-effect instrumental variable (IV) regression with Modified Jones Model (1995).		**Panel B: Panel A: low family ownership level (family ownership %<30%) Main GLS random-effect model with Modified Jones Model (1995).**	
EMJ	**Coefficient**	**z-value**	**Coefficient**	**z-value**
P_SCGI	-0.0003843**	-2.43	-----	-------
SCGI	-------	------	-0.0003252***	-3.11
FSZ	-0.004561**	-2.30	-0.004791**	-2.39
LEV	0.0411834***	3.54	0.0419158***	3.56
ROA	0.0335545	1.23	0.0373933	1.37
BIG4	-0.0005522	-0.17	-0.000558	-0.17
LOSS	0.0115847***	2.72	0.0116657***	2.73
Constant	0.1255439***	4.92	0.1249444***	4.74
R-squared	29%		29%	
Number of obs	821		821	
Chi-square	70.17***		70.289***	
Prob > chi2	0.0000		0.000	

Note: ***, ** and * denote significance at 1%, 5% and 10% levels, respectively. Chapter Four provides a detailed definition of the measurement of all the variables used for the estimation.

Table 5.39 compares the results obtained from G2SLS random-effect instrumental variable (IV) and main random-effect GLS model for a subsample of firms that have low family ownership. The results are highly comparable. The coefficient of SCGI in Panel B and its instrument part P_SCGI in Panel A are both negative and significant. This indicates that for firms that have low family ownership, the governance mechanism is effective in reducing the practices of earnings management. Moreover, the results of the control variables in the G2SLS regression are similar to those presented in the main GLS random-effect model in Panel B. In addition, all the coefficients of the control variables have similar predicted signs and degrees of significance. Hence, it can be concluded that the evidence provided in this study in relation to the influence of family ownership on the association between corporate governance and earnings management is robust after controlling for endogeneity. Given these outcomes, the GLS random-effect model is an appropriate estimation technique for the study's data.

5.8 Summary of empirical findings and discussion chapter

This chapter reported and discussed the empirical results of this study. This chapter began by presenting the descriptive statistics of the variables used in the regression analysis of this study. Then the chapter discussed the OLS assumptions to determine whether the OLS regression is an appropriate estimation method for the study's primary analysis. The results of the OLS tests showed that the study's data had met only the linearity and multicollinearity assumptions. However, regarding the remaining assumptions, First, the results show that all of the study's variables did not follow the normal distribution. Thus, all the continuous variables in this study are winsorised up to the 5th and beyond the 95th percentile to mitigate non-normalities. Second, the compliance-index model and the equilibrium-variable model show evidence of heteroscedasticity and serial correlation thus. This study used a random-effects model based on Generalised Least Squares (GLS) to account for the problem of heteroscedasticity and autocorrelation presented in the compliance-index model as suggested by prior studies (Alzoubi, 2017; Brooks, 2008; Sáenz González & García-Meca, 2014; Shen & Chih, 2007). Regarding the issues of heteroscedasticity and autocorrelation in the equilibrium-variable model, this study follows prior studies (Masliza et al., 2011; Kouaib & Jarboui, 2016; Mayur & Saravanan, 2017) that use Feasible Generalised Least Squares (FGLS) regression proposed by Wooldridge,(2001) to account for these issues.

This chapter discussed the results of the compliance-Index model, which examines the relationship between firm-level corporate governance and earnings management practices. The result showed a statistically significant and negative association between the Saudi Corporate Governance Index (SCGI) and the level of earnings management practices. However, this result does not hold for firms with high family ownership since the results reveal that the effectiveness of corporate governance (measured by the SCGI) in constraining earnings management is reduced in Saudi firms with high family ownership.

Regarding the equilibrium-variable model, the results indicate that Saudi firms are likely to have lower levels of earnings management practices if they have a high percentage of strictly independent directors on the boards, a larger board size, and audit committees that meet more often. Additionally, the results show that Saudi firms with higher government ownership, institutional ownership and family ownership have lower levels of earnings management practices. In contrast, the current study did not find any evidence that the strict

independence of the audit committee index, percentage of directors with multiple directorships, percentage of family directors on the board and percentage of blockholders ownership have any significant relationship with the extent of earnings management practices in the Saudi firms. Also, the study found that non-strict board/audit independence is ineffective in reducing earnings management practices in Saudi firms.

Finally, this chapter presented the robustness tests and examined the existence of potential endogeneity problems. The results showed that the findings of the compliance-Index model were stable across all three earnings management models. Specifically, this result indicated that a higher level of corporate governance disclosure is effective in reducing earnings management practices conducted via long- and short-term discretionary accrual. The endogeneity examinations show that the effect of corporate governance (SCGI) on constraining earnings management is robust for alternative earnings management measures after controlling for the endogeneity problem. Also, the findings of the impact of family ownership on the relationship between corporate governance mechanism and earnings management practices were stable across all three earnings management models after controlling for endogeneity and were robust to alternative proxy for family control. Regarding the findings of the equilibrium-variable model, the results were moderately robust to (i) alternative earnings management models, (ii) endogeneity, and (iii) alternative proxies for strict board independence.

CHAPTER SIX

SUMMARY AND CONCLUSIONS

6 Introduction

The main aim of this chapter is to discuss the conclusion of the thesis. Thus, to achieve this aim, this chapter first summarises the entire research in section 6.1. Second, section 6.2 summarises the findings obtained from the compliance-index model and the equilibrium-variable model used in this study to investigate the nexus between corporate governance mechanisms and EM practices. Third, a summary of the research contribution is presented in the section 6.3. Fourth, this chapter highlights the implications and recommendations of the findings for Saudi policymakers and investors in the section 6.4. Finally, this chapter discusses the study's limitations and offers suggestions for future studies in section 6.5.

6.1 Brief Summary of the research

The main objective of the current study was to examine how a broad composite SCGI and other corporate governance variables can explain the observable changes in firm-level earnings management practices in Saudi firms. To achieve this aim, this study adopted the compliance-index model to examine the relationship between SCGI and earnings management practices. While the equilibrium-variable model was used to investigate the relationship between individual corporate governance characteristics and earnings management. Based on a sample of 112 Saudi-listed firms between 2006 and 2017, the results of the compliance-index model show a negative and significant relationship between the Saudi corporate governance index and earnings management practices. This result indicates the efficiency of the new Saudi corporate governance code in improving the governance practices in Saudi firms since the results show that the more the firms comply

with governance provisions of the Saudi governance code, the fewer earnings management practices conducted in their firms.

Nonetheless, this result did not hold for firms with high family ownership/ board dominated by family members since the results revealed that the effectiveness of corporate governance (measured by the SCGI) in constraining earnings management is reduced in these Saudi firms. Thus, this result indicates that the presence of controlling family members in firms weakens the effectiveness of the corporate governance mechanisms in Saudi firms. This finding is in line with the entrenchment hypothesis that suggests that controlling family owners are motivated to engage in opportunistic behaviour at the expense of minority shareholders to obtain personal benefits that are not distributed to other minority shareholders (Wang, 2006; Shleifer & Vishny, 1997). Hence, they might intend to weaken the governance structure in their firms to facilitate their opportunistic behaviours.

The results of the equilibrium-variable model indicate that Saudi firms are likely to have lower levels of earnings management if they have a large proportion of strict independent directors on the boards, a larger board size, and their audit committees meet more often. Additionally, the results show that Saudi firms with higher government ownership, institutional ownership and family ownership have lower levels of earnings management practices. Additionally, the findings indicate the effectiveness of strict board/audit independence in reducing earnings management practices in Saudi firms. In contrast, this study did not find evidence that supports the efficacy of non-strict board/audit independence in reducing earnings management practices in Saudi firms. These results prove the efficiency of the independence criteria set out in the 2017 SCGC. Finally, the results of the current study have confirmed the effectiveness of the newly implemented governance code in Saudi firms and facilitated the evaluation of the efficiency of the new governance regulations in the Saudi context.

6.2 Summary of the research findings

This section summaries the findings obtained from the compliance-index model and the equilibrium-variable model that used in this study to investigate the nexus between corporate governance mechanisms and EM practices in the Saudi context as follows:

- The first hypothesis of this study examines the relationship between SCGI and EM practices. The result showed a negative and significant relationship between SCGI and EM practices. This result indicates that better-governed Saudi firms tend to be associated with lower EM practices than poorly governed counterparts. This result is consistent with the theoretical expectation of agency theory that good corporate expected to enhance the integrity and reliability of the financial reporting process by establishing an effective control system which, in turn, will constrain the opportunistic behaviour of managers (Katmon and Farooque, 2017; Feng and Huang, 2020; Lehmann, 2016). Similar to this research's findings, Prior studies reported a negative and significant association between corporate governance practices proxied by the governance index and EM practices (e.g., Bekiris & Doukakis ,2011 ; Jiang et al. ,2008) ;Elghuweel et al., 2016).

- Regarding the equilibrium-variable model, this study found that strict independent directors are associated negatively and significantly with EM practices in Saudi-listed companies. This result indicates that the independent directors who meet all the independence criteria recommended by the 2017 SCGC are effective in monitoring and reducing the practices of EM in Saudi firms. The positive influence of independent directors on EM practices is explained theoretically by agency theory. According to Fama and Jensen (1983), independent directors are motivated to provide effective monitoring to signal their good reputation to the external labour market. Thus, Fama and Jensen (1983) recommended the board of directors to include outside independent directors to increase the board's effectiveness and decrease the agency problem in public firms. Prior studies that apply independence criteria to evaluate the independence of independent directors provide similar results to this study. For example, Davidson et al. (2005) excluded all the outside directors who engaged in transactions with the firms in their measure of board independence. Then, Davidson et al. (2005) examined the role of those independent directors in

relation to earnings management practices. Their findings indicated that board independence is negatively associated with earnings management practices. Likewise. Setia-Atmaja et al. (2011) found that independent directors who have not previously worked as executives in the firms effectively reduce EM practices in Australian listed firms.

- Unlike the results of strict board independence, this study found an insignificant relationship between the strict Independent Index of the audit committee and EM. This result indicates that the compliance of Saudi firms with independence requirements for independent directors on the audit committee was ineffective in reducing EM practices. As discussed in chapter five, this result might attribute to the fact that Saudi firms do not fully comply with all the 11 independence criteria recommended by the 2017 SCGC. This resulted in having independent directors on the audit committee who violated at least one or more of the independence criteria. Such independent directors might reduce the audit committee's effectiveness as a monitoring mechanism in the firms. The result is contradicted by the agency theory perspective, which suggests that independent directors strengthen the monitoring practices of the board of directors (Fama & Jensen, 1983; Jensen & Meckling, 1976). The ineffectiveness of independent directors on the audit committee is documented by previous studies also (e.g., Katmon and Farooque ,2017 ; Baxter and Cotter ,2009). However, other studies reported that the audit committee's independence is effective in constraining earnings management practices (e.g., Saona et al. ,2020 ;Feng and Huang ,2020).

- Regarding the board of directors attributes, the research findings show that board size has a negative and significant relationship with EM. This result is in line with the agency theory perspective, which suggests that a larger board will be more vigilant in capturing any agency problems that may arise because of the large number of members observing managers' activities (Kiel & Nicholson, 2003). This theoretical argument is confirmed empirically by prior studies (B Xie et al. ,2003 ; Abed et al. ,2012) that show that large boards are effective in reducing earnings management practices because they have more members who share their different experiences in monitoring the managerial practices.

- Contrary to this study's predictions, the findings show a positive and significant relationship between board meetings and EM practices. This result indicates that when the board meets more frequently, it leads to an increase in earnings management practices in Saudi firms. In this regard, Ebrahim (2007) and Vafeas (1999) argue that firms might be active and meet more frequently during times of crisis. Hence, the increase in the number of board meetings could be a response from the board to challenging business practices, such as earnings management. The positive association between board meetings and EM practices is documented in prior studies (e.g., Ebrahim (2007).

- In line with the study predictions, the findings show that the frequency of audit committee meetings is associated negatively and significantly with EM practices in Saudi-listed firms. This finding indicates the effectiveness of the discussion and the quality of the information provided to directors during audit committee meetings in Saudi firms. Hence, audit committee directors utilise their time effectively during the audit committee meetings, which allows them to perform their responsibilities in supervising the production of the financial information of the Saudi firms (Adams and Ferreira, 2009 ;Vafeas, 1999 ;Qamhan et al. ,2018). This finding offers further support to previous studies(e.g., Qamhan et al. 2018 ; Biao Xie et al. ,2003) that documented the effectiveness of audit committee meetings in constraining EM practices.

- This study found that directors that hold additional directorships positions have no significant effect on constringing EM practices in Saudi-listed firms. This finding can be explained by the busyness hypothesis, which suggests that holding several directorships decreases the directors' effectiveness in monitoring the company since they will be too busy to serve each firm effectively (Jian Zhou, 2004; Alshetwi, 2016; Jiraporn et al., 2008). Hence, this situation may reduce the directors' ability to detect earnings management practices (Alshetwi, 2016). Similar results are found by prior studies (e.g., Alshetwi, 2016; Hashim & Abdul Rahman, 2006).

- The study found that family directors on the board have no significant effect on EM practices in Saudi firms. This result could be attributed to the fact that the presence of family directors on the board weakens the monitoring effectiveness of the board of directors (Chen et al. ,2020 ;Prencipe & Bar-Yosef, 2011; Jaggi & Leung, 2007;

Jaggi et al., 2009; Wan Mohammad & Wasiuzzaman, 2019). Similar to this research findings, Jaggi and Leung (2007) found that the presence of family directors on the board has a negative but insignificant effect on both earnings management practices, as measured by the Modified Jones Model (1995) and the absolute value of performance-adjusted current discretionary accruals in Hong Kong firms.

- Regarding ownership structure, this study found that the existence of government ownership in Saudi firms is effective in constraining earnings management practices. This finding is consistent with the argument that firms with high government ownership can easily obtain financial support from the government. Hence, the managers of these firms face less pressure to engage in earnings management to achieve financial targets that allow them to secure financial benefits (Guo & Ma, 2015). This finding aligns with studies of Wang & Yung (2011) and Elghuweel et al. (2016) that found a negative and significant association between government ownership and EM practices.

- Consistent with the study's prediction, the study found that institutional shareholders in Saudi firms play an important role in constraining earnings management practices. This finding suggests that institutional shareholders in Saudi firms might act as a complementary corporate governance mechanism in reducing such practices. the effectiveness of the institutional shareholders in the Saudi context could be attributed to the fact that majority of them are domestic investors. According to Liu et al. (2018), domestic investors are expected to provide superior monitoring, since domestic institutional investors are better acquainted with local regulations, accounting standards, the local language, firm culture, and business model of the firm. These factors together might give domestic institutional investors an advantage in reducing their monitoring cost and thus facilitate their discovery of earnings manipulations (Liu et al., 2018).However, the findings of this study give further support to studies such as Alzoubi (2016) and Liu et al. (2018)

- In line with the study's prediction, the study found that family ownership has a negative association with earnings management practices. This finding can be interpreted by the alignment effect hypothesis, which implies that family firms are less likely to be involved in earnings management practices because these practices might destroy the family's reputation, wealth and long-term performance (Wang,

2006). Therefore, Family shareholders are incentivised to monitor managers' behaviours and reduce their opportunities to engage in earnings management practices. Similar to the study's finding, Mengoli et al. (2020) found that family firms report higher earnings quality than non-family firms. Also, Wang (2006) found that family ownership significantly increases the quality of earnings in their firms.

- In contrast to the expectation of this study, no significant relationship was found between blockholder ownership and earnings management practices. Peasnell et al. (2005) documented similar results. They found that blockholder ownership has a positive but insignificant effect on earnings management practices in UK firms. The insignificant impact of blockholders in reducing earnings management in Saudi firms could be attributed to the fact that the ability of blockholders to govern and exercise their voting rights as influential large shareholders depend on the degree of the legal protection of shareholders' voting rights in the country (Shleifer & Vishny, 1997). Saudi Arabia is a developing country with a civil law system and low legal protection of minority shareholders' rights. Hence, the blockholder owner might not exercise their voting right effectively in Saudi firms, resulting in an insignificant effect on earnings management practices.

- Regarding the role of family ownership in the relationship between CG mechanism and EM practices, the results revealed that the effectiveness of corporate governance (measured by the SCGI) in constraining earnings management is reduced in Saudi firms with high family ownership/ board dominated by family members. In contrast, corporate governance mechanisms effectively constrain EM in Saudi firms with low family ownership /boards not dominated by family members. Similar findings are documented in prior studies (e.g., Prencipe and Bar-Yosef ,2011 ; Jaggi et al. ,2009; Wan Mohammad and Wasiuzzaman ,2019 ;Setia-Atmaja et al., 2011; Stockmans et al., 2013).

- Finally, the additional analysis of this study reveals that the proportion of strict independent directors on the board and audit committee effectively monitors opportunistic managerial discretion (i.e. earnings management practices). In contrast, this study did not find evidence that supports the efficacy of non-strict board/audit independence in reducing earnings management practices in Saudi firms.These findings prove the effectiveness of the 11 independence criteria

recommended by the Saudi Corporate Governance Code in evaluating the independence of the independent director.

6.3 Summary of the contribution of the study

As discussed in Chapter One, this study contributes to the literature that examines the association between corporate governance and earnings management in several ways:

First, the current study contributes to the literature by examining the influence of corporate governance practices on earnings management, using individual corporate governance characteristics (i.e., equilibrium-variable model) and the composite governance index (i.e. compliance-index model). The majority of prior studies in the literature examine the influence of corporate governance on earnings management practices by using either individual corporate governance characteristics (Sáenz González & García-Meca, 2014; Rahman & Ali, 2006; Jamaludin et al., 2015; Peasnell et al., 2005; Saona et al., 2020) or by using a corporate governance index as a proxy for the corporate governance system in the companies (Larcker et al., 2007; Bowen et al., 2008; Lehmann, 2016). However, limited studies combine the two methods (e.g., Elghuweel et al., 2016; Feng & Huang, 2020). The current study used the individual corporate governance characteristics and governance index to proxy for the governance practices because each approach has deficiencies that can be eased if used jointly. Thus, using both the equilibrium-variable model and the compliance-index model will help the researcher to capture more precisely the role of corporate governance in earnings management practices since each approach will offset the limitations of the other.

Second, unlike prior studies that examine the effectiveness of board independence on reducing earnings management practices by using the percentage of independent directors declared by the firms as a proxy for board independence (e.g., Park and Shin, 2004; Peasnell et al., 2005; Saona et al., 2020; Suyono and Farooque, 2018), this study contributes to existing studies by developing a comprehensive measure to proxy for strict board independence. This measure contains 11 formal independence criteria extracted from the 2017 SCGC to evaluate the independence of each declared independent director on Saudi firms' board/audit committee. By using this measure for board and audit committee independence, this study addresses the limitations of previous studies that used the

percentage of independent directors on the board as a proxy for board independence (e.g., Park and Shin, 2004; Peasnell et al., 2005; Saona et al., 2020; Suyono and Farooque, 2018).These studies are criticised for not considering the quality of the directors' independence when computing the ratio of independent directors on the board (Crespí-Cladera and Pascual-Fuster, 2014; García-Meca and Sánchez-Ballesta, 2009). The developed measure in this study addresses this concern by evaluating the quality of board independence in Saudi firms. Therefore, by using this measure, this study offers more accurate and reliable results regarding the effectiveness of board independence in constraining earnings management practices than prior studies do (e.g., Park and Shin, 2004; Peasnell et al., 2005; Saona et al., 2020; Suyono and Farooque, 2018).

Third, this study contributes to the body of literature by examining the influence of family ownership on the association between corporate governance mechanisms (measured by using a comprehensive governance index) and earnings management practices in Saudi-listed firms. According to the researcher's knowledge, no single study exists in the literature that examines the effectiveness of corporate governance in reducing earnings management practices in family firms by constructing a comprehensive governance index. Hence, this study is distinct from prior studies that only examined the effectiveness of individual corporate governance mechanisms (e.g., board independence and audit independence) in constraining earnings management practices in family firms (e.g., Prencipe and Bar-Yosef, 2011; Jaggi and Leung, 2007; Jaggi et al., 2009; Wan Mohammad and Wasiuzzaman, 2019). Therefore, the findings of this study are expected to be more convincing since the corporate governance index will be able to capture the quality of the governance mechanism in the firms better than the individual corporate governance characteristics.

Finally, this study makes several distinctive contributions in the Saudi context,

I. unlike prior Saudi studies that examine the effect of the limited number of individual corporate governance characteristics on earnings management practices (e.g., Alshetwi, 2018; Baatour et al., 2017; Al Nasser, 2021; Habbash, 2012), this study extends these studies by examining the effect of seven individual corporate governance mechanisms (i.e., strict board independent, strict audit committee independent, the board size, board meeting, audit meeting, multiple directorships and family members on the board) and four ownership types (i.e., government,

institutional, family, and blockholders' ownership) on constraining earnings management practices in Saudi listed companies. Hence, this study can be considered broader in scope than previous Saudi studies. Additionally, it will help expand the current understanding regarding the effectiveness of these governance mechanisms in the Saudi context, which has institutional environments remarkably different from the US or UK.

II. Previous Saudi studies (e.g., Alshetwi, 2018; Baatour et al., 2017; Al Nasser, 2021; Al-thuneibat, 2016; Habbash, 2012) suffer from methodological deficiencies such as ignoring the endogeneity problem and employing a smaller sample size and shorter time scale. Therefore, this study overcomes these limitations by using the instrumental variable approach to address the possible endogeneity which may exist between internal governance mechanisms and earnings management. In addition, this study uses a larger sample size and longer time scale than prior Saudi studies. This, in turn, will allow the researcher to capture more precisely the effects of both cross-sectional and time-series changes in governance mechanisms on earnings management and improve the generalisation of the results (Omar & Simon, 2011; Ntim et al., 2012).

6.4 The Implications and recommendations of the study's findings

The findings obtained in this study from examining the nexus between CG mechanisms and EM practices provide several important implications and recommendations for policymakers, regulators, shareholders and potential investors.

First, the results of the compliance-index model showed a negative and significant relationship between the Saudi corporate governance index and earnings management practices. This result indicates the efficiency of the new Saudi corporate governance code in improving the governance practices in Saudi firms since the results show that the more the firms comply with governance provisions of the Saudi governance code, the fewer earnings management practices conducted in their firms. Furthermore, this result has confirmed the effectiveness of the newly implemented governance code in Saudi firms and facilitated the

evaluation of the efficiency of the new governance regulations in the Saudi context. Therefore, this finding greatly benefits investors, policymakers and regulatory bodies in Saudi Arabia, such as CMA, the Ministry of Commerce and Tadawul. This is because this study provided an empirical assessment of the effectiveness of the 2017 Saudi Corporate Governance Code in constraining EM practices. Despite the effectiveness of the SCGC, the descriptive analysis of this study showed that Saudi firms comply with almost 60% of all 142 provisions in the SCGI. This figure indicates that some Saudi firms within the sample do not follow some of the 2017 SCGC rules. So far, Saudi companies have not yet reached the phase of full compliance with the corporate governance code. This situation may relate to the flexibility given to Saudi companies through the "compliance or explain" approach rather than "compliance or penalties". Also, this relatively low compliance by Saudi firms might attribute to the fact that almost 16% of articles in SCGC still apply voluntarily. Thus, Saudi policymakers might need to consider making all the governance provisions in SCGC mandatory for Saudi firms. Such action is expected to increase the compliance of Saudi firms with the provisions of SCGC.

Second, the findings of this study indicated the effectiveness of strict board/audit independence in reducing earnings management practices in Saudi firms. In contrast, this study did not find evidence that supports the efficacy of non-strict board/audit independence in reducing earnings management practices in Saudi firms. These results proved the efficiency of the independence criteria set out in the 2017 SCGC. Thus, Saudi firms should consider applying these independent criteria in selecting independent directors. Although the CMA has made the independence criteria mandatory, the descriptive analysis of this study showed that only 22% of the Saudi firms in the study's sample comply with all 11 independence criteria recommended by SCGC. Hence, CMA is encouraged to monitor more closely the compliance of the Saudi firms with the 11 independence criteria. Also, CMA is encouraged to introduce some financial penalties for Saudi firms that appoint independent directors that violate at least one or more of the independence criteria recommended by SCGC. These practices are expected to increase the compliance of the Saudi firms with 11 independence criteria.

Third, the results of the equilibrium-variable model indicate that Saudi firms are likely to have lower levels of earnings management if they have larger board sizes and their audit committees meet more often. Based on these results, Saudi policymakers such as CMA are

suggested to relax the requirements of having a maximum of 11 members on the board. Since large board sizes are proven to provide adequate monitoring in Saudi firms. Furthermore, the study's results indicated the audit committee meetings' effectiveness in constraining earnings management practices in Saudi firms. Accordingly, CMA is encouraged to increase the minimum level of audit committee meetings in Saudi firms since the SCGC requires the audit committee to hold at least four meetings during the Company's financial year. Increasing the number of audit committee meetings is expected to enhance the directors' effectiveness in monitoring the managers' opportunistic behaviours in Saudi firms.

Fourth, the equilibrium-variable results show that directors holding additional directorships positions do not significantly affect earnings management practices in Saudi-listed firms. This finding confirmed the busyness hypothesis, which suggests that holding several directorships by directors might decrease their effectiveness in monitoring the company since they will be too busy to serve each firm effectively (Jian Zhou, 2004; Alshetwi, 2016; Jiraporn et al., 2008). The Saudi Corporate Governance Code prohibited directors from occupying more than five directorships on the boards of other Saudi-listed firms. CMA may need to consider decreasing this maximum number of directorships to boost the efficacy of directors' effectiveness by requiring them to serve a limited number of Saudi firms.

Fifth, the results of the equilibrium-variable model showed that Saudi firms with higher government ownership, institutional ownership and family ownership have lower levels of earnings management practices. These findings suggest that government, institutional and family ownership actively monitor the managerial practices in Saudi firms. These results might guide investors to invest in firms with high government, institutional and family ownership as these firms are expected to provide more transparent financial information that helps the investors to make optimal investment decisions. Despite the effectiveness of government, institutional and family ownership, their level of ownership is relatively low in Saudi firms (see section 5.3). Thus, Saudi policymakers such as CMA needs to encourage Saudi firms to increase the level of these types of ownership in their firms.

Sixth, the results of this study revealed that corporate governance mechanisms (measured by the SCGI) are ineffective in constraining earnings management practices in Saudi firms with high family ownership/boards dominated by family members. Thus, this result indicates that the presence of controlling family members in firms weakens the effectiveness of the

corporate governance mechanisms in Saudi firms. To mitigate the negative impact of the dominance of family members in Saudi firms, Saudi regulators such as CMA should not allow family members to own more than 30% of the firm's shares and not occupy more than two seats on the board of directors since the current study shows that these thresholds trigger the entrenchment practices of family members in Saudi firms. Also, CMA is encouraged to introduce governance regulations that aim to restrict the influence of family members in Saudi firms since there are no regulations in the SCGC, Listing Rules and Companies Act related to the participation of family members in the listed Saudi firms.

Finally, as presented above, the study's findings show that Saudi firms that comply better with the SCGI provisions tend to be associated with lower earnings management. The result offers empirical support for the agency theory used in this study. Within the Saudi firms' context, compliance with SCGI provisions appears to be a major way by which Saudi firms can reduce agency costs (i.e. earnings management practices) and solve the principle-agency conflict by aligning managers' interests with those of shareholders. However, this result did not hold for firms with high family ownership/ board dominated by family members since the results revealed that the effectiveness of corporate governance (measured by the SCGI) in constraining earnings management is reduced in these Saudi firms. This result occurs because family firms face severe agency problems that arise between controlling and non-controlling shareholders (Type II agency problems) due to their significant stock ownership and substantial control over the firms' board of directors (Ali et al., 2007). This control gives the family shareholders the power to seek private benefits at the expense of other shareholders. For example, Family shareholders might manipulate earnings to hide the adverse effects of related party transactions (Chen et al., 2020). Thus, family shareholders would be interested in weakening the governance practices to facilitate their opportunistic behaviours in the firms (Chen et al., 2020; Jaggi et al., 2009; Jaggi and Leung,2007).

6.5 Research limitations and suggestions for future research

Despite the robustness of the study's findings, the current study suffered from several limitations that could be addressed in future studies.

First, it is well acknowledged in the literature that measurement errors might occur when computing discretionary accruals, which are used as a proxy for earnings management (Dechow et al., 2010). The current study sought to address this issue by employing three distinct models of discretionary accruals, namely the Modified Jones Model (1995), the Kothari (2005) model and the short-term earnings management model that, estimated by computing the discretionary working capital accrual of the Modified Jones Model (1995). As mentioned above, these models measure only earnings management practices conducted through accruals. Earnings management, however, might be performed by restructuring the firm's underlying operations that directly affect the firm's cash flow (i.e. real earnings management practices) (Roychowdhury, 2006). Thus, a possible extension to the current study is to examine the effect of SCCI and other individual corporate governance variables on real earnings management practices in the Saudi context.

Second, the current study used a single theoretical framework to explain the relationship between corporate governance and earnings management practices. This approach might not provide a comprehensive understanding of how corporate governance might affect the earnings management practices conducted by the managers (Abdou et al., 2020). This is because many theories in the literature offers conflicting views related to the managerial behaviours in the firms and how their behaviours might affect the use of earnings management practices. For example, the current study used agency theory that assumes managers will behave opportunistically in pursuing their interests in the firms, which are against shareholders' interests. Based on the agency theory perspective, managers will use opportunistic earnings management practices to increase their bonuses (Healy et al., 1987; Bergstresser & Philippon, 2006). However, other theories, such as stewardship theory, assume that managers are responsible stewards and they will use earnings management to communicate the firms' private information related to the future cash flow or future profitability (Siregar and Utama ,2008; Subramanyam ,1996; Krishnan ,2003; (Donaldson & Davis, 1991). Thus, due to the presence of these conflicting theoretical perspectives, future studies are encouraged to apply multi-theoretical frameworks because combining

different views from many theoretical perspectives might provide novel insights towards interpreting and explaining earnings management practices in firms(Abdou et al., 2020).

Third, this study employed an un-weighted governance index that considers every corporate governance provision equally important. Prior studies (e.g.,Florou & Galarniotis, 2007; Owusu & Weir, 2016; Isukul & Chizea, 2017) criticised this approach for not reflecting the importance of each corporate governance mechanism in the index. Thus, future studies are encouraged to improve their analysis by constructing a weighted governance index that accounts for the varying level of importance attached to each governance provision in the index.

Fourth, the self-constructed governance index used in this study might not be accurately constructed since it suffers from methodological deficiencies such as weighting the governance provisions, increasing measurement errors and the absence of theoretical guidelines that identify the boundaries or the dimension of the corporate governance mechanisms(e.g., researcher have to decide which corporate governance item should be included in the corporate governance index). These factors might invalidate the governance index (Larcker et al., 2007; B. Black et al., 2017). Therefore, A possible solution to these limitations is using principal component analysis to construct a governance index since the PCA approach allows the selection of the governance provisions (elements) and assigning them to certain governance sub-indices (components) to be based on their statistical properties rather than being constructed based on the researchers' judgment (B. Black et al., 2017). Furthermore, the weighting of each corporate governance provision in the PCA-based governance index will be done based on statistical procedures instead of given equal or arbitrarily weights by the researchers (Ammann et al., 2011). Therefore, future studies might use the PCA method in constructing a governance index and examining the effect of such a governance index on earnings management practices.

Fifth, this study's analysis is restricted to SCGI and eleven governance variables that explain the level of earnings management practices in Saudi firms. As data availability improves, future studies may need to investigate how other potential governance variables, such as foreign ownership and board gender diversity, can affect earnings management in the Saudi context.

Sixth, the current study evaluates the independence of the independent directors on the board and audit committee based on the information disclosed in the annual reports that show, for example, their family ties, ownership level, directorships positions, tenure, and remuneration value. Hence, the reliability of this measure depends on the reliability of the information provided in the annual reports.

Finally, the study's findings are based on Saudi data and should apply to other countries with similar institutional and business environments as Saudi Arabia. However, these results might not be relevant to firms in other countries with different institutional environments from Saudi Arabia. Hence, further research is encouraged to confirm the study's results in other institutional settings.

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