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Examining the extent of and determinants for sustainability assurance quality: 
the role of audit committees

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Abstract

This study examines the extent of and determinants for sustainability assurance quality. Data comprises sustainability assurance statements published by the top 100 listed companies in Australia and New Zealand from 2017-2019. The findings indicate that Australian companies lead their New Zealand counterparts in sustainability assurance. While sustainability reporting has risen, assurance rates remain significantly low. Accountants dominate the market and companies prefer to use their own auditors for sustainability assurance work. Sustainability assurance quality is poor and does not vary significantly amongst Australian and New Zealand companies. Low-quality sustainability assurance plays a limited role in mitigating potential stakeholder-agency conflicts. The regression analysis indicates that audit committee characteristics such as members’ independence, industry/market expertise and attending meetings enhance sustainability assurance quality, while audit committee size has no affect. These findings suggest that audit committee characteristics such as independence, industry expertise, and regular meeting attendance have the potential to reduce stakeholder-agency conflicts by improving the quality of sustainability statement assurance. Our findings build on the sustainability assurance literature by exploring current trends in sustainability assurance practices in Australia and New Zealand where corporate governance codes have been recently revised. Further, these findings are timely given recent changes in standards (ISAE3000 and GRI). Our study contributes to the audit committee literature and sheds light on the role played by audit committee characteristics on sustainability assurance statement quality. The study findings potentially offer useful insights for practitioners, standard setters and regulators.

**Keywords:** Sustainability reporting; sustainability assurance quality; corporate governance; audit committee characteristics; stakeholder-agency theory

**JEL Classifications:** M41

**Acronyms**

SAPs - Sustainability assurance provider
ASAPs - Accounting sustainability assurance provider
NASAPs - Non-accounting sustainability assurance provider
IAASB - International Audit and Assurance Standards Board
GRI - Global Reporting Initiative
ISAE - International Standard on Assurance Engagements
AA1000AS – AccountAbility 1000 Assurance Standard
1. Introduction

Sustainability reporting is now well-established globally with 93% of the world’s largest 250 corporations publishing a sustainability report\(^1\) (KPMG, 2017). Sustainability reporting is designed to provide stakeholders with information on a business’s economic, social and environmental performance (Global Reporting Initiative, 2019). However, the credibility of sustainability reports is often challenged, with critics complaining that companies are simply publishing marketing material designed to promote the corporate image as being socially and environmentally responsible (Hahn & Lülfs, 2014; Lyon & Maxwell, 2011). To help companies address such criticisms and enhance stakeholders’ confidence in their sustainability disclosures\(^2\), a new market for sustainability assurance services has developed (Farooq & De Villiers, 2017). Sustainability assurance is defined as “an engagement in which external assurance provider is hired to assure the sustainability report” (Farooq & De Villiers, 2017, p. 82).

Research on sustainability assurance can be organized into three broad areas (Farooq & De Villiers, 2017; Gillet-Monjarret & Rivière-Giordano, 2017). The first examines published sustainability assurance statements and compares these against assurance standards. These studies aim to evaluate the extent of sustainability assurance quality (Boiral & Heras-Saizarbitoria, 2020; Nilipour et al., 2017; Nilipour, 2016). The second seeks to identify and understand the various factors driving the demand for sustainability assurance, including the determinants of sustainability assurance quality (Gillet-Monjarret, 2015; Martínez-Ferrero et al., 2018). The third engages with relevant stakeholder groups to understand their views and perspectives on this new form of assurance (Farooq & de Villiers, 2018, 2019a).

This study focuses on the first two categories. Notable research investigating the extent of sustainability assurance includes studies by Ackers and Eccles Neil (2015), Boiral et al. (2019), Boiral and Heras-Saizarbitoria (2020), Deegan et al. (2006a), Gillet (2012), Hahn and Lülfs (2014), Marx and van Dyk (2011), Mock et al. (2007), Nilipour et al. (2017), O'Dwyer and Owen (2007), and Perego (2009). Research into the factors driving sustainability assurance quality includes work by Zorio et al. (2013) examining the role of sustainability assurance provider type, Martínez-Ferrero et al. (2018) analyzing the expertise and experience of the sustainability assurance provider, Hummel, Schlick and Fifka, 2019 investigate the impact of sustainability performance and assurer

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\(^1\) The term ‘sustainability report’ refers to both stand-alone documents and the sustainability information contained within a traditional annual report.

\(^2\) See Gillet-Monjarret (2015) for an analysis of the impact of media pressure on reporting entities’ decision to secure external assurance.
affiliation to accounting profession on quality of sustainability assurance, Ruiz-Barbadillo and Martínez-Ferrero (2020) studying sustainability assurance engagements undertaken by the financial auditor, and García-Sánchez (2020) investigating the managerial characteristics (CEO characteristics and board effectiveness).

While these studies offer useful insights, they suffer from certain limitations. First, several of these studies were published before recent regulatory changes were made. Second, some of the more recent studies either examine sustainability assurance statements of either a specific industry, i.e. mining (Boiral & Heras-Saizarbitoria, 2020; Boiral et al., 2019) and/or focused on the world’s largest corporations (Seguí-Mas et al., 2015). While these studies offer useful insights, the actions of mining companies or the world’s largest corporations do not necessarily reflect the state of practice in other industries or specific countries where: (1) companies may be smaller in size and thus undertake practices in a different manner (e.g. while 93% of the world’s largest 250 corporations engage in sustainability reporting, only 73% of the top 100 companies in 49 countries engage in sustainability reporting (KPMG, 2017); and (2) each country is different and therefore has the potential to reveal unique insights that further our understanding of this rapidly evolving practice. For example, the Australian context has been dominated by non-accounting sustainability assurance providers (Deegan et al., 2006a) whereas globally the market is dominated by accounting sustainability assurance providers (Gillet-Monjarret, 2018). Of the two studies that examined the Australian and New Zealand contexts, Deegan et al. (2006a) examined sustainability assurances published by 33 Australian listed companies in 2003, while Nilipour et al. (2017) shed light on the state of sustainability assurance statements published by ten listed New Zealand companies in 2013.

However, these studies predate recent national and international institutional changes. For instance, in 2014 the Australian Securities Exchange (ASX) introduced new guidelines encouraging listed entities to engage in sustainability reporting. Similarly, the New Zealand Stock Exchange (NZX) revised its corporate governance code in 2017 which now requires listed companies to publish a sustainability report. The revised assurance standard ISAE3000 was issued in 2015 and the new GRI standards were issued in 2016. These changes raise the importance of sustainability reporting for boards, which are now more likely to demand external assurance (Gillet-Monjarret, 2018). Finally, regular content analysis of assurance statements is important as it helps to trace the progress of this new and rapidly evolving assurance market (Manetti & Toccafondi, 2012).
In terms of research examining drivers of sustainability assurance quality, there is a need for more academic attention in this area, particularly on the role played by corporate governance mechanisms in promoting high-quality sustainability assurance (García-Sánchez, 2020; Velte, 2020; Velte & Stawinoga, 2017). Further, studies examining sustainability assurance drivers fail to account for the role played by internal audit committees in influencing the quality of sustainability assurance (see, Velte & Stawinoga, 2017). The audit committee forms an integral part of corporate governance structures and is tasked with the role of monitoring the quality of corporate financial and non-financial reporting, and also the quality of financial audits and non-financial assurance engagements (Trotman & Trotman, 2015). The presence of an audit committee enables companies to disseminate reliable information which assists in building stakeholder confidence (Free et al., 2021; Trotman & Duncan, 2018). Similarly, from a sustainability reporting and assurance perspective, research shows that audit committees play a vital role in overseeing the publication of credible sustainability reports (Al-Shaer & Zaman, 2018), and ensuring that these disclosures are free from managerial capture (Appuhami & Tashakor, 2017; Farooq & De Villiers, 2019b). However, while Al-Shaer and Zaman (2018) investigate the role played by audit committees in influencing corporate decisions to secure external assurance over their sustainability disclosures, they do not comment on audit committees’ impact on sustainability assurance quality. Notably, two recent literature reviews also call to investigate the composition of the audit committee particularly its members industrial/market expertise on quality of assurance (Velte, 2020; Velte & Stawinoga, 2017).

Addressing these gaps in the literature, this study addresses two research objectives. First, it examines the extent of sustainability assurance quality amongst the top 100 listed Australian and New Zealand companies across a three-year period (2017-2019), thereby providing recent evidence on sustainability assurance practices in Australia and New Zealand. Second, it assesses the impact of internal audit committee characteristics on the quality of sustainability assurance. To address these research questions, we analyze a panel dataset (including cross-section and longitudinal analysis) comprising sustainability assurance statements published by large Australian and New Zealand companies from 2017-2019. These sustainability assurance statements were checked using the content analysis technique, and scored against an index (Martínez-Ferrero et al., 2018). Subsequently, a regression analysis is used to evaluate the impact of audit committee characteristics on sustainability assurance statement quality. We use Stakeholder-Agency theory (Hill & Jones, 1992) to analyze the research findings. The use of this lens is appropriate given that sustainability
assurance is designed to provide assurance to multiple stakeholders/readers of the sustainability report (Hill & Jones, 1992).

The results of the content analysis indicate that Australian companies perform better than New Zealand companies in both sustainability reporting and sustainability assurance. We find that while sustainability reporting rates have improved, sustainability assurance rates remain remarkably low. Further, accounting sustainability assurance providers (ASAPs) dominate the market, and companies prefer to engage their financial auditor for assurance over their sustainability reports. We find that sustainability assurance quality is poor amongst both Australian and New Zealand companies. This absence of quality is due to poor or no disclosure over materiality, completeness and responsiveness and with room for improvement on the addressee, the objective of assurance, and conclusion for both ASX and NZX companies. Low-quality sustainability assurance does little to address potential stakeholder-agency conflicts. The results of the regression analysis indicate that audit committee characteristics such as members’ independence, industry/market expertise and attendance at meetings are positively associated with sustainability assurance quality. However, we find that audit committee size yields no effect on sustainability assurance quality.

This study makes three main contributions. First, the study findings build on the sustainability assurance literature by exploring the current trends in sustainability assurance practices in Australia and New Zealand where corporate governance codes have been recently revised. Further, these findings are timely given recent changes in standards (ISAE3000 and GRI).

Second, the findings add to the literature by examining the determinants, particularly corporate governance characteristics, on sustainability assurance quality (García-Sánchez, 2020; Martínez-Ferrero et al., 2018; Ruiz-Barbadillo & Martínez-Ferrero, 2020). This study supports the argument that audit committees are not only helpful in improving financial audit quality (Ghafran & O’Sullivan, 2017) but are also equally effective in enhancing sustainability assurance quality. Our empirical analysis provides longitudinal evidence on the association between audit committee attributes and sustainability assurance quality as compared to cross-sectional research conducted by Al-Shaer and Zaman (2018). The longitudinal studies allow the researcher to directly identify causal relationships that affect internal validity, including pre-existing causes (Dobbs & van Staden, 2016).
Third, at a practical level, the findings from the study may be useful to practitioners, standard setters and regulatory agencies. Assurance practitioners may find the study insights practical in carrying out their assurance work. Standard setters may wish to develop greater guidance stressing the importance of elements where sustainability assurance practitioners’ (SAPs) performance has been criticized. Stock exchanges are encouraging non-financial reporting in Australia and New Zealand, but mandatory regulations/requirements on assurance are required to speed up the use of sustainability assurance, which not only enhances the credibility of sustainability reports but also provides accountability to external stakeholders.

The remainder of this paper is structured as follows. The next section provides prior evidence on the nature and extent of assurance statements published in different regions of the world. Section 3 gives details on data sources and methodology. Section 4 provides the results of the study and section 5 discusses the findings and concludes the paper.

2. Theoretical framework and literature review

This section is divided into three parts. The first section is a discussion of the theoretical framework used to analyze the data. The second offers a summary of studies that examine the extent of published sustainability assurance statements. The third reviews the analyses that explore the determinants of sustainability assurance quality.

2.1 Stakeholder-agency Perspective

Prior studies have employed either agency theory (Jensen & Meckling, 1976) or stakeholder theory (Freeman, 1984) to explore the extent (Martínez-Ferrero et al., 2018) and determinants (García-Sánchez, 2020) for sustainability assurance quality. Agency theory sheds light on the relationship between a principal (providers of capital) and an agent (management) and offers governance insights on reducing the principal-agent conflict. However, critics argue that agency theory recognizes a single principle (shareholders) and focuses on corporate governance mechanisms that address primarily shareholders’ interests (Aguilera & Jackson, 2010; Bosse & Phillips, 2016). In doing so this lens ignores the broader group of stakeholders who interact with companies; they can affect and be affected by companies’ policies, strategies and operations. Stakeholder theory was introduced to address this narrow world view adopted by agency theory (Aguilera & Jackson, 2010; Zaman et al., 2020). This theory recognizes the presence of a broad range of stakeholder groups (other than providers of capital) having a legitimate stake in companies that influence their interests. In doing so this lens assists in highlighting the importance of sustainability reporting to
corporate stakeholders. However, stakeholder theory fails to provide managers with specific mechanisms to assist in managing conflicting stakeholder interests (Jain & Zaman, 2020).

To address the limitations inherent in these two theoretical lenses, Hill and Jones (1992) suggest employing a combined theoretical lens of stakeholder-agency theory. Doing so recognizes the presence of multiple stakeholders and offers tools to address conflicts in stakeholder relationships. This lens has been used in some recent studies to understand the role played by the corporate board in reducing stakeholders’ conflicts (Gerged, 2021; Jain & Zaman, 2020). Others have explored how and to what extent executive compensation schemes assist in managing conflicting stakeholders’ interests (Zolotoy et al., 2020).

Based on such studies, we argue that such a theoretical lens is appropriate for exploring the sustainability assurance quality and its determinants. We reasoned that due to the voluntary nature of sustainability assurance services, the company should undertake such an exercise to establish/boost stakeholder confidence in corporate sustainability disclosures. In this way, a large number of studies indicate a significant positive relationship between sustainability assurance and stakeholder perception of sustainability report credibility (Carey et al., 2000; Cheng et al., 2015; Coram et al., 2009; Fuhrmann et al., 2017; Hodge et al., 2009; Wong & Millington, 2014). Consequently, higher stakeholder confidence, resulting from corporate voluntary sustainability assurance will curtail or diminish any conflict between the agent (management) and multiple principals (i.e. stakeholders). However, sustainability assurance is a voluntary undertaking and assurees (managers) and SAPs are free to establish the scope of assurance engagement, type of standard/s, nature of assurance work and the level of assurance provided (Farooq & De Villiers, 2019a). Therefore, this theory offers a useful lens to understand the variations in the extent of sustainability assurance quality.

2.2 Extent of sustainability assurance quality

Sustainability assurance has developed at different rates in different countries (Ackers, 2015). For example, KPMG (2017) reported that 67% of the world’s largest companies (G250) issued assured sustainability reports in 2016-2017, compared to 45% of leading companies (N100) from 49 nations. However, sustainability assurance is still voluntary in most regions (Junior et al., 2014) including Australia and New Zealand. There is no consensus on who should provide sustainability assurance.

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3 We frame sustainability assurance as “an engagement in which external assurance provider is hired to provide assurance over the sustainability report”. See Farooq & De Villiers, C. (2017).
assurance and what competencies a provider should possess (Farooq & de Villiers, 2018). Consequently, many SAPs compete in the market, pursuing their own professional and commercial interests (Smith et al., 2011). These SAPs include accounting sustainability assurance providers (ASAPs) and non-accounting assurance provider (NASAPs) (Farooq & De Villiers, 2019a; Manetti & Toccafondi, 2012). The NASAPs comprise environmental engineering consultancies, sustainability specific consultants, and certification bodies (Deegan et al., 2006b; O'Dwyer & Owen, 2005), while the ASAPs mainly consist of the ‘big four’ (or Big4) accounting firms (Perego, 2009). Mock et al. (2013) report that 52% of the assurance statements were issued by Big4 firms in 2006-2007 compared to 36% in 2002-2004. Gürtürk and Hahn (2016) analyzed 61 assurance statements published by UK FTSE100 and German DAX indexed companies in 2012. They stated that 77% of assurance statements were produced by ASAPs and 33% by NASAPs.

Given that a diverse range of professionals are operating in the field, the assurance statements produced are consequently heterogeneous in terms of their contents; engagement scope, standards used, work undertaken and the level of assurance provided (Gürtürk & Hahn, 2016). This heterogeneity adds to the uncertainty around the quality of sustainability assurance work (Martínez-Ferrero et al., 2018). Research assesses sustainability assurance quality by examining the information contained in published sustainability assurance statements (García-Sánchez, 2020; Martínez-Ferrero et al., 2018; Ruiz-Barbadillo & Martínez-Ferrero, 2020; Zorio et al., 2013). The information contained in the assurance statement is used to evaluate the quality of assurance process that sits behind the published assurance statement. The basic premise of this approach to evaluating sustainability assurance quality is that the more information disclosed in the assurance statement, the more comprehensive/higher quality the assurance process is (Ruiz-Barbadillo & Martínez-Ferrero, 2020; Zorio et al., 2013). In addition to this, comprehensive disclosure in these assurance statements allows stakeholders (i.e. sustainability report users) to assess the nature and scope of the assurance engagement and accordingly the degree of confidence they can gain from the SAP’s opinion (Martínez-Ferrero et al., 2018).

Consistency and uniformity in the application of a suitable standard not only improves the readability of assurance reports but also enhances their credibility/quality (AccountAbility, 2008; Owen et al., 2000). Information about the standards used allows stakeholders to evaluate the appropriateness of the standard applied (Deegan et al., 2006b). The International Audit and Assurance Standards Board (IAASB) and AccountAbility are the two main international standard-setters (Farooq & de Villiers, 2018). The International Standard on Assurance Engagement (ISAE)
3000 and AA1000 Assurance Standard (AA1000AS) have been issued by IAASB and AccountAbility, respectively (Junior et al., 2014). The ISAE 3000 was issued to guide professional accountants on a wide variety of non-financial assurance engagements (Ackers, 2015), and is not specifically designed for the assurance of sustainability reports (Ackers, 2009; Farooq & de Villiers, 2018; IAASB, 2013). In contrast, AA1000AS is a purpose-built standard, explicitly developed for sustainability assurance engagements (AccountAbility, 2008; Ackers, 2015). The scope of the two standards differs in terms of assurance engagements (Marx & van Dyk, 2011). However, ISAE 3000 and AA1000AS are not competitors; instead, they complement each other (Farooq & de Villiers, 2017; Gillet-Monjarret, 2018). Due to the lack of consensus, these standards have been applied variably. Manetti and Becatti (2009) analyzed 34 assurance statements and found that 41% mentioned ISAE 3000, 12% AA1000AS, 20% both and the remainder did not refer to any standard. The use of a particular assurance standard depends on the type of assurance provider (Ackers, 2015). ASAPs prefer to apply the accountancy-based ISAE 3000 and NASAPs frame their assurance process under the guidance of AA1000AS (Mock et al., 2007; Perego & Kolk, 2012; P. P. Perego, 2009).

ISAE 3000 suggests that a title should indicate the report is an ‘independent assurance report’ (IAASB, 2013, p. 21). Further, ISAE 3000 states that a description of the assuror’s independence from the company should also be provided in the body of the report. However, it has been observed that SAPs, more specifically ASAPs, tend to represent their independence in the titles of sustainability assurance statements (Ackers, 2015). Similarly, in a longitudinal analysis of sustainability assurance practices in France, Gillet-Monjarret (2018) identified that the majority of SAPs (particularly ASAPs) used the word ‘independent’ in the titles of sustainability assurance statements. Interestingly, the findings of these studies relate to areas with mandatory regulations, which may not represent the state of practice in regions where assurance of sustainability reports is voluntary.

The title of the sustainability assurance statement may include the name of an addressee (Gürtürk & Hahn, 2016). Para 69(b) of ISAE 3000 states that ‘an addressee identifies as a party or parties to whom the report is directed’ (IAASB, 2013, p. 60). It also explains that normally the ‘engaging party’ is the addressee of the sustainability assurance statement, but some engagements may include other ‘intended users’ (IAASB, 2013, p. 60). The term ‘intended user’ does not specify the particular audience of the report. Unlike a financial audit, there is currently no stipulation on who should be the addressee of a sustainability assurance statement (Ackers, 2015). Consequently,
Sustainability assurance statements are addressed to board members, the reporting company, management and external stakeholders or the general public (Ackers, 2009; O'Dwyer & Owen, 2007).

Sustainability assurance engagements may cover quantitative or qualitative performance disclosures, underlying processes and systems and data collection procedures, amongst others (Deegan et al., 2006a). However, it has been widely observed that the scope of assurance engagement neglects the concerns of stakeholders (Adams, 2004; O'Dwyer & Owen, 2007). Further, most assurance engagements tend to cover the selected performance data, rather than complete contents of the sustainability report. In terms of the level of assurance provided, ISAE 3000 states that the primary objective of the assurance provider is to obtain either limited or reasonable assurance, as appropriate, to express a conclusion on ‘whether subject matter information is free from material misstatement’ (IAASB, 2013, p. 6). In a limited assurance, engagement SAPs undertake fewer procedures as compared to a reasonable assurance. In addition, ISAE 3000 allows assurors to provide different levels of assurance for certain sections of the sustainability report. However, providing multiple assurance levels in a single report may create confusion for the reader (Ackers, 2015). According to AA1000AS, there are two types of assurance engagements. Firstly, a Type-1 assurance engagement covers the nature and extent of a company’s adherence to AA1000 AccountAbility Principles (i.e. inclusivity, materiality and responsiveness) (AccountAbility, 2008). In a Type-2 assurance engagement the SAP evaluates the reporting entities adherence to AccountAbility Principles as well as evaluating performance information disclosure. Engagements under AA1000AS focus on providing a moderate to high level of assurance, i.e. high-level assurance is provided where assurors obtain sufficient evidence to support the reliability of the subject matter information (AccountAbility, 2008).

Previous studies have identified variations in the level of assurance provided by SAPs (Ackers, 2009; Gürtürk & Hahn, 2016). In their analysis of 161 assurance statements published by leading companies in 2010, Manetti and Toccafondi (2012) found that 86% of the sustainability assurance statements issued by ASAPs provided limited assurance. Likewise, Ackers (2015) reported that all of the ASAPs in their analysis provided limited levels of assurance. Even though reasonable assurance may enhance the confidence of stakeholders in an assured sustainability report, ASAPs focused on issuing limited assurance statements, which may be the outcome of auditor conservatism (Ackers, 2015).
The assurance conclusion is the most important content of the sustainability assurance statement (Ackers, 2015). Therefore, the assurance opinion should be unambiguous and must provide a clear understanding to the reader. The assurance conclusion may include the level of assurance obtained, the objective of the engagement, any limitations on the engagement undertaken, and recommendations (Ackers & Eccles Neil, 2015; Mock et al., 2013) with a qualified or unqualified opinion. The precise meaning of the assurance conclusion depends on the level of assurance engagement. Therefore including a statement about the level of assurance engagement: firstly, helps readers to understand the engagement risk; and secondly, shows to what extent users can rely on the underlying sustainability disclosure in the report (Ackers, 2015).

ISAE 3000 states that assurance providers shall form an opinion on ‘whether the subject matter information is free from material misstatement’ (IAASB, 2013, p. 20). It further suggests that for a reasonable assurance engagement a conclusion should be in a positive form and for a limited assurance engagement the conclusion should be expressed in a negative form. Positively framed assurance conclusions are stated as ‘in our opinion, internal control is effective …’, whereas negatively framed assurance conclusions could include statements such as ‘nothing has come to our knowledge …’ In this way, assurance opinions expressed under a reasonable assurance convey the message that sufficient evidence has been obtained to confirm the reliability of the information disclosed in the assurance report. ASAPs tend to express opinions in a negative form, while NASAPs frame their conclusion statements affirmatively. Ackers and Eccles Neil (2015) reported that 76% of sustainability assurance statements were written in a negative form and all of those sustainability assurance statements were produced by ASAPs.

Despite the fact that prior studies offer useful insights there are several reasons that motivate further research on the extent of sustainability assurance. First, sustainability assurance is a relatively new topic and the market is rapidly developing in various parts of the world. The practice remains voluntary in most jurisdictions and thus sustainability reporters and assurance providers are free to agree amongst themselves on the scope and objectives of engagements (Farooq & De Villiers, 2017; GRI, 2013). Keeping pace with these developments and tracking the trajectory of this new form of assurance requires greater academic attention. Second, with the exception of Deegan et al. (2006a), Heenetigala et al. (2016) and Nilipour et al. (2017), research has not focused on the Australian and New Zealand context. However, the Deegan et al. 2006 study is dated and it suffers from two limitations. Firstly, it was conducted prior to the introduction of the revised version of ISAE 3000 (effective as of December 2015) (IAASB, 2013) and the new GRI standards
launched in 2016. Secondly, except for a few points the study does not offer a comparative analysis of ASAPs and NASAPs (Table 1). Importantly, content analysis of assurance statements should be conducted at regular intervals in order to trace the progress of sustainability assurance practices (Manetti & Toccafondi, 2012). The study by Heenetigala et al. (2016) is industry-specific, focusing on the assurance practices of Australian listed mining, utility and energy companies. Further, the study uses data collected in 2014. Third, the institutional setting of countries is rapidly changing. Stock exchanges are beginning to incorporate sustainability reporting into their governance codes (Ackers & Eccles, 2015; KPMG, 2017).

These institutional changes raise the profile of sustainability reporting, which in turn should motivate boards to consider the credibility of their sustainability disclosures (at least in theory). For example, in Australia, listed companies are required to disclose the verification processes for the sustainability reports they release to the market (ASX Corporate Governance Council, 2019). Similarly, in New Zealand, the New Zealand Stock Exchange (NZX) issued a new corporate governance code in 2017. The revised code requires that sustainability reports should be prepared using an international reporting framework (IIRC or GRI). These requirements aim to promote balanced, transparent and public disclosure of companies’ environmental, social and financial performance. Thus this research aims to examine sustainability assurance statements published by Australian and New Zealand companies and compare these statements with the requirements of best practice (as outlined in audit and assurance standards) to assess how the practice is developing in these two countries.

2.3 Audit committee characteristics and sustainability assurance quality

Despite the voluminous research on the determinants of sustainability assurance quality, studies examining the role played by corporate governance mechanisms, particularly internal audit committees characteristics remain scarce (Al-Shaer & Zaman, 2018; Trotman & Trotman, 2015). The limited studies in this area have examined the impact of audit committee characteristics on the demand for sustainability assurance service (Al-Shaer & Zaman, 2018). However, the advent of sustainability assurance adds to the responsibilities of corporate audit committees. For example, the Australian Auditing and Assurance Standards Board (AuASB) and the New Zealand Auditing and Assurance Standards Board (NZAuSAB) require audit committees to understand all types of external assurances services their company procures (Farooq & De Villiers, 2017, 2019a).
In the field of financial audits, researchers note that audit committees’ effectiveness depends on the attributes of their members (Abbott et al., 2004; Sun et al., 2012) such as independence, industry expertise, attendance at meetings and committee size (Appuhami & Tashakor, 2017). Such requirements are also enshrined in the corporate governance codes of the Australian Securities Exchange (ASX) and New Zealand’s Exchange (NZX) (ASX Corporate Governance Council, 2019; Zaman et al., 2020). We fill this gap in the literature by examining the impact of audit committee characteristics on sustainability assurance quality. In the subsequent sections, we draw on the financial audit literature to examine whether audit committee characteristics potentially influence sustainability assurance quality.

2.3.1 Audit committee independence

The concept of director independence refers to corporate directors being free from financial, business and personal interests in the company they run. This impartiality ensures directors can fulfil their fiduciary duties and protect stakeholder interests. Director independence is a key quality which allows corporate officers to make decisions which are in the company’s and stakeholders’ best interests. Prior literature shows that an audit committee’s independence plays a key role in promoting the vigilant monitoring and supervision of financial audits (Bronson et al., 2009). For example, Al-Najjar (2011) notes that the presence of non-executive/independent directors enables audit committees to effectively monitor the work undertaken by the auditors. From a sustainability assurance perspective, Al-Shaer and Zaman (2018) provide evidence that audit committee independence positively influences the demand for sustainability assurance, particularly from ASAPs. Meanwhile in the case of audit quality, Archambeault and DeZoort (2001) find that companies with independent members on audit committees were less likely to engage in "suspicious auditor switches" after receiving a modified opinion. Further, Lee et al. (2004) in their findings report that independent audit committee members - under the fear of litigation and loss of reputation - assist external auditors in fulfilling their assurance duties. Similarly, this study posits that companies with independent audit committees are more likely to receive higher quality sustainability assurance services. Hence, the following hypothesis is generated:

**H1:** The audit committee’s independence positively influences sustainability assurance quality.

2.3.2 Audit committee industry expertise

Audit committee is responsible for monitoring the quality of corporate reporting, the quality of internal and external assurance engagements (including financial and non-financial/sustainability
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assurance) and the robustness of internal controls and risk management processes. To execute these duties, competent committee members must possess industry expertise. The extant literature has documented the role members’ expertise plays in enhancing the effectiveness of audit committee monitoring and supervisory functions (Velte, 2020). For example, a committee dominated by directors who lack industry expertise will simply undermine the audit committee’s ability to function properly (DeZoort et al., 2002). Extending this literature, scholars such as Ghafran and O'Sullivan (2017) finds that in UK listed companies, audit committee members with superior industry expertise significantly enhance the quality of auditing. Similarly, Cohen and Simnett (2015) argued that industry expertise enhances audit committees’ financial oversight capabilities. Similarly, ASX and NZX corporate governance guidelines encourage companies to appoint audit committee members with relevant and proven industry expertise (Goodwin, 2003). Hence, we argue that the presence of members with industry expertise improves the ability of audit committees to oversee higher quality sustainability assurance work. Thus, based on the above arguments the following hypothesis is generated:

**H2:** The audit committee’s industry expertise positively influences sustainability assurance quality

2.3.3 Audit committee meeting attendance

Meetings are important events through which committee members engage in discussion and make decisions on key audit-related issues. It is therefore important that audit committee members diligently prepare for and attend meetings regularly. Failure to do so is likely to negate any benefit gained from appointing members who are independent and have industry expertise. Further, regular committee meeting attendance indicates director’s commitment to discharging their fiduciary duties in line with stakeholder expectations. Consequently, studies show that the regular participation of members in meetings is a key driver in promoting audit committee effectiveness (Abbott et al., 2000; de Zwaan et al., 2011). Through regular attendance of meetings, audit committee members show they are diligently overseeing the work of assurance providers (Menon & Williams, 1994).

In this regard, the ASX corporate governance guidelines recommend companies disclose members’ meeting attendance details in their annual reports (ASX Corporate Governance Council, 2019). Disclosing this information allows corporate stakeholders to evaluate directors’ performance, thereby allowing stakeholders/principals to hold their directors/agents accountable. Further, board meetings enhance coordination amongst board members, a vital requirement for the
smooth function of the committee. Researchers have shown that audit committee members regularly attending will improve corporate demand for sustainability assurance (Al-Shaer & Zaman, 2018). However, these studies are limited to exploring the probability of companies demanding sustainability assurance and fail to comment on whether such meeting attendance also enhances sustainability assurance quality. Therefore, based on the foregoing discussion, we argue that audit committee meetings attendance will enhance members’ ability to monitor sustainability assurance processes, which ultimately improves the quality of sustainability assurance statement produced.

**H3:** The audit committee’s meeting attendance positively influences sustainability assurance quality.

### 2.3.4 Audit committee size

The term audit committee size refers to the number of directors appointed to serve on the committee. Research on the impact of audit committee size and its subsequent effectiveness offers two diverging perspectives. One group of studies argue that committees with more members benefit from a diversity of opinions and expertise. This diversity assists in the effective functioning of the audit committee. Accordingly, Zaman et al. (2011), finding that large audit committees effectively perform their supervisory role, which in turn leads to better quality audits. However, another school of thought disagrees with this assertion, arguing that have more members simply fuels disagreement, conflict and results in slow decision-making (Barua et al., 2010). Proponents of this view contend that a large-sized audit committee is associated with poor internal controls and weak monitoring (Abbott et al., 2002; Collier & Gregory, 1999). Further, this poor monitoring results in audit committees failing to protect stakeholders’ interests and the publication of poor-quality financial reports (Abbott et al., 2002). Based on the extant literature, we argue that the relationship between audit committee size and assurance quality may be either positive or negative. Accordingly, we formulate the following hypothesis:

**H4:** The audit committee’s size influences sustainability assurance quality.

### 3. Research method

This section presents the research method used to answer the research questions and discusses how the data was collected and analyzed.
3.1 The Australian and New Zealand context

The objectives of this study are to examine the extent of and determinants for sustainability assurance quality in Australia and New Zealand. These countries’ corporate setting is dominated by a managerial perception that views corporate sustainability, and consequently sustainability reporting and assurance, more as an ethical obligation and less as a legal or contractual one (Zaman, 2018; Farooq & De Villiers, 2017, 2019a). The accountability of corporate entities is based on a stakeholder-agent model where informal and morally driven agreements, alongside formal legal/contract based relationships, play an important role in binding stakeholders (Woodward et al., 2001, p. 387). In comparison to their European counterparts, where corporate sustainability is driven by legalistic/rule-based systems, companies in Australia and New Zealand enjoy greater flexibility and corporate sustainability is driven by a principle-based regulatory environment (Reddy et al., 2010).

However, in recent years, the ASX and the NZX, responding to growing stakeholder demands for corporate sustainability, have introduced principles encouraging sustainability reporting in their corporate governance best practice codes. The introduction of sustainability reporting requirements by stock exchanges is identified as a key driver motivating corporate boards to voluntarily secure external assurance over their sustainability disclosures (Farooq & De Villiers, 2017, 2019b). However, despite these requirements the demand for sustainability assurance has remained low⁴ (Deegan et al., 2006a; Nilipour, 2016). It should be noted that not enough examinations have been done of the quality of sustainability assurance practices following these institutional changes, so the literature is scarce on this topic. Therefore, the evaluation of sustainability assurance merits academic attention.

3.2 Sample selection and data collection

To address the research objectives, we target the top 100 listed Australian and New Zealand companies. These companies were selected because they were more likely to engage in sustainability reporting (Amran & Haniffa, 2011) and therefore more likely to secure sustainability assurance (Larrinaga et al., 2020). It is important to note that these companies are required to publish their sustainability reports and corresponding sustainability assurance statements, which

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⁴ As noted in the introduction, research examining sustainability assurance in the Australian and New Zealand setting remains limited. The exceptions are Deegan et al. (2006) and Nilipour et al. (2017). Nonetheless these studies predate recent changes that occurred in the corporate governance codes issued by the ASX and NZX. Further, these studies have not commented on the determinants of sustainability assurance quality.
could be accessed from their websites. Our data sample includes companies from all industries⁵. To identify the top 100 listed companies, we visited the websites of ASX and NZX⁶. From the websites of these two stock exchanges, we developed a list of 200 companies. These 200 companies’ sustainability reports were analyzed for a three-year period (2017-2019), yielding a total of 600 company year observations.

Subsequently, we visited the websites of each company to identify and download their published sustainability reports for 2017 to 2019. Our data sample starts in 2017 since this allows us to examine any changes in sustainability assurance practices following recent revisions to corporate governance codes issued by the ASX and NZX. Corporate sustainability reports were identified using different names such as sustainability report, corporate responsibility or corporate social responsibility report and social and environmental report. If a sustainability report was not published, then the company’s annual report was analyzed to identify potential sustainability disclosures made therein (De Villiers & Marques, 2016). This was done by reading each report’s table of contents and by conducting a word search (keywords included ‘sustainability’, ‘corporate social responsibility’, ‘social responsibility’ or ‘environmental responsibility’, ‘Environment, Social and Governance (ESG)’, ‘corporate philanthropy’, ‘charity’, and ‘corporate donation’). Once a company’s sustainability report was identified it was searched to assess whether the company had sought external assurance concerning its sustainability disclosures, i.e. sustainability assurance. To identify the sustainability assurance statement we searched each report’s table of contents and executed a word search (keywords/terms including ‘independent assurance statement or report’, ‘external assurance statement or report’, ‘sustainability’ or ‘social and environmental assurance statement or report’, ‘sustainability’ or ‘social and environmental verification statement or report’).

3.3 Data analysis

This study adopts the technique of content analysis to analyze the sampled sustainability assurance statements (Krippendorff, 2004). Content analysis has been defined as a technique for gathering data, and it involves modifying qualitative and quantitative information into pre-defined categories to derive patterns in the presentation and reporting of information. Content analysis seeks to analyze published information systematically, objectively and reliably (Steenkamp & Northcott, 5 Our industry classification is based on Standard Industry Classification (SIC) which is available at https://siccode.com/ ⁶ The list of Australia’s top 100 listed companies was obtained from www.ASX100list.com while New Zealand’s top 100 listed stocks were obtained from https://www.nzx.com/markets/NZSX.
This technique has been widely employed in the extant literature to evaluate the quality of sustainability assurance services (García-Sánchez, 2020; Martínez-Ferrero et al., 2018; Ruiz-Barbadillo & Martínez-Ferrero, 2020; Zorio et al., 2013). These studies have adapted the evaluation framework presented by O'Dwyer and Owen (2005) which is based on the guidelines of internationally available sustainability reporting and assurance standards (ISAE3000, AA1000AS and GRI). We also followed the O'Dwyer and Owen (2005) framework to perform the content analysis (see Table 1).

Notably, in line with recent studies (García-Sánchez, 2020; Martínez-Ferrero et al., 2018), we use different scales to identify and evaluate the content/elements present in each sustainability assurance statement. For instance, a dichotomous scale is used to determine whether the ‘responsibility of parties’ has been clearly stated (scale 1) or not (scale 0) in the assurance statements. The scale (0 to 2) is employed to identify ‘level of independence’ in assurance statements. Meanwhile the scale (0 to 3) is used to determine ‘scope of assurance engagements’, ranging from ‘No reference’ (scale 0) to ‘Reference to scope covering complete report’ (scale 3). These scales make it possible for us to calculate the final score of each company to determine the quality of its assurance statement. The maximum score that a company may obtain is 23, which confirms the high-quality assurance engagement.

Based on these scoring criteria, the identified sustainability assurance statements were analyzed to evaluate the elements and ultimately score/assess the extent of sustainability assurance quality (see Table 1). To maintain the reliability of the coding process, one of the authors recorded the results of two randomly picked reports on a separate Excel spreadsheet. Thereafter, the corresponding author of the study independently repeated the same process. We then applied the K-alpha test to check the coding reliability (Krippendorff, 2018). The K-alpha score was 0.91 which is well above the recommended score of 0.80 (Krippendorff, 2018). Finally, a discussion between the authors was undertaken to clarify any disagreements around coding/scoring carried out on the remaining reports. This ensured there was a consensus amongst the research team on the scores allocated (de Villiers & Alexander, 2014). It is worth noting that the coding/scoring of sustainability assurance statements undertaken by one researcher was checked by the other two researchers.
3.4 Determinants of sustainability reporting assurance quality

To empirically estimate the impact of audit committee characteristics on sustainability assurance quality, we estimated Equation 1.

\[
SAQ_{i,t} = \varphi_0 + \sum_{j=1}^{n} \theta_j X_{j,i,t} + \sum_{k=1}^{m} \delta_k C_{k,i,t} + \epsilon_{i,t} 
\]

(equation 1)

Where i represents the company and t represents time (year); \(SAQ_{i,t}\) represents the Sustainability Assurance Quality score for \(i\) company at year \(t\) year; \(X_{j,i,t}\) represents the independent variables for a company \(i\) at year \(t\); and \(C_{k,i,t}\) shows the control variables of the study. We discuss the variable measurement in the following sections.

3.1 Variable measurement

3.1.2 Dependent variable: Sustainability Assurance Quality

Although we have calculated initial scores of sustainability assurance quality by adopting the content analysis (as per section 3.3), we do acknowledge that such a score might be dependent on industry selection. While some industries, due to the nature of their business, undertake high-quality assurance others may engage limited assurance to fulfill their objective. To rule out such biases in our empirical analysis we followed prior literature (Zaman et al., 2020) and employed the Thomson Reuters Eikon™ calculation criteria to develop a revised sustainability assurance quality score. Thomson Reuters Eikon uses a percentile rank scoring methodology to calculate the required variable score and is based on three factors: (1) the number of companies that are worse than the current one, (2) the number of companies that have the same value to the current one, and (3) number of companies that have a value. We use the Thomson Reuters Eikon’s Business Classification Industry Group (BCIG) as the benchmark because these topics are more relevant and similar to companies operating in the same industry. Specifically, we use the following formula to calculate the percentile score for each company across the specific industry:

\[
SAQ = \frac{\text{No. of companies with worse value} + \text{No. of companies with the same value including the current one}}{2} \times \frac{1}{\text{No. of companies with a value}}
\]

Whereas the Sustainability Assurance Quality (SAQ) is the equally weighted sum of all relevant indicators for each industry based on the raw score obtained through content analysis of assured sustainability reports using prior literature. More specifically, our Sustainability Assurance
Quality score is a weighted average industry adjusted composite score on a scale of 0 - 100 and encompasses twelve variables related to the sustainability reports assurance quality, where 100 reflect a high level of assurance quality.

**Independent Variables: Audit committee characteristics**

As discussed in section 2.3, we identify four internal audit committee characteristics that may potentially determine sustainability assurance quality. Our first characteristic includes audit committee independence, which we measured as the proportion of independent directors to total directors on an audit committee ($AC\text{ IND}$). The second characteristic we include is the industry expertise of audit committee members, captured through an indicator variable which takes the value 1 if the company has appointed at least one audit committee member with industry expertise, 0 otherwise ($AC\text{ industry expertise}$). Third, to capture board meeting attendance, we use the percentage of board members attending the meeting ($AC\text{ meeting attendance}$). Finally, we used the natural logarithm of the number of audit committee members as a proxy to measure audit committee size $Ln\ (AC\ SIZE)$. These measures are in line with the literature (Al‐Shaer & Zaman, 2018; Buallay & Al-Ajmi, 2019).

**Control variables**

We also control for various corporate governance and company-level variables. We include Board size as the measure of the number of directors on a corporate board and Board independence as the ratio of independent directors to total directors. These corporate governance mechanisms allow companies to not only engage in sustainability assurance but also enhance the quality of such assurance engagements (García‐Sánchez, 2020; Martínez‐Ferrero et al., 2018). Similarly, Firm size being the natural logarithm of total assets, ROA being the rate of total income to total assets and $MTB$ ratio have also been included as controls. These variables are incorporated because larger companies with bigger profits and market returns have more financial resources to invest in sustainable activities (García‐Sánchez, 2020; Ruiz‐Barbadillo & Martínez‐Ferrero, 2020) (see Appendix A).

**5. Findings and analysis**

This section presents the findings from the study. The analysis is organized into two parts. The first evaluates the extent of sustainability assurance statement quality. The second discusses the regression results of sustainability assurance quality determinants.
5.1 Extent of sustainability assurance statement quality

This study finds that 287 sustainability reports were published by ASX listed companies across our sample period (i.e. three years) and 169 sustainability reports published by companies listed on NZX (see Table 2). We found on average of 96% of ASX top 100 listed companies engaged in sustainability reporting across the sample period (2017-2019). In comparison, the average sustainability reporting rates for the top 100 NZX companies amounted to 56% over the same period. These results suggest NZX companies lag behind their ASX counterparts in terms of sustainability reporting. As a result of this exercise, we found that 99 sustainability assurance reports published by the listed Australian companies across our sample period (i.e. three years) and 19 sustainability assurance statements issued by the listed New Zealand companies (Table 2). Interestingly, we note an upward trend in ASX companies embracing sustainability assurance (24% from 2017 to 40% in 2019). To our surprise, the NZX companies despite an upward surge in sustainability reporting (34% to 81%), reveal a modest decline in assurance from 12% to 10% across the three years.

In terms of sustainability assurance rates, we find a similar trend, i.e. the dominance of ASX companies (35% average across three years) over their NZX counterparts (on average 11% across the sample period). However, sustainability assurance rates among reporters remained significantly low. Although, when compared with prior studies, our results for ASX show a significant improvement over the years. For instance, Deegan et al. (2006) show that 21% of sustainability assurance rates among ASX listed companies for the period 2001 to 2003. Nilipour et al. (2017) find 26% assurance statements for the year 2013 which is 16% higher than our findings. However, part of the reason for this stark decline in assurance rate is due to the significant increase in sustainability reporters in New Zealand (81 reporters across our sample period compared with 31 reporters in 2013). When compared with global sustainability assurance rates, the findings confirm that Australia and New Zealand continue to lag behind the rest of the world, with 45% of the top 100 companies in 49 countries that issued sustainability reports did include assurance statements (KPMG, 2017). Given that sustainability reporting is no longer a new practice, the reluctance of reporters to subject their sustainability disclosures to outside scrutiny is a cause for concern. Either sustainability reporters do not want to bear the cost of assurance or they intentionally fail to invest time and resources into improving their underlying systems (necessary for the rigors of external assurance) or simply prefer to avoid external scrutiny (Farooq & De Villiers, 2019a).
In terms of types of SAPs, we find evidence of remarkable change in the sustainability assurance market in Australia. For 2000-2003 Deegan et al. (2006a) reported that approximately 85% (28 out of 33 statements) of sustainability assurance providers were NASAPs. In our sample, 98% of the sustainability assurance statements were provided by ASAPs. Likewise, in New Zealand 79 of the sustainability assurance statements were issued by ASAPs. Overall, 92% of assurance providers were ASAPs in Australia and New Zealand. Thus, this research documents a considerable change in the Australian and New Zealand sustainability assurance market. Farooq and de Villiers (2018) found that while sustainability reporting managers in Australia and New Zealand were more partial to NASAPs, senior managers and boards were more inclined towards recruiting ASAPs for their sustainability assurance work. Senior managers and boards are more comfortable with ASAPs, as the approach they adopt to sustainability assurance mimics their financial audit methodologies (e.g. accounting assurance standards are used). On their part, accountants were advocating the use of the same assurance provider for sustainability assurance and financial audit services (Farooq & de Villiers, 2018). It appears that these observations are playing out in the market as 73% of sustainability assurance statements published in Australia, and 47% in New Zealand, were issued by the reporters’ financial auditors (i.e. the financial auditor and the sustainability assurance provider were the same).

Additionally, this study discovered that among the Big4 SAPs, Ernst and Young (EY) had the highest market share with 47% assurance statements issued in Australia, while in New Zealand Deloitte dominates the market share at 47%. The rise in the non-financial market share for Big4 auditors is subject to their market entry strategies (Farooq & de Villiers, 2018, 2019a). We found that in the recent past, two of the Big4 audit firms have acquired sustainability consultant assuror, i.e. EY acquired Net Balance and KPMG took over Banarra (AccountantsDaily, 2014, 2015). These acquisitions not only increased the market share of acquirers but also helped them to maintain their supremacy of the auditing profession.

In terms of sustainability assurance quality, we did not find any significant difference in Australian and New Zealand companies during the three years (see, Table 3). The average score amongst ASX (NZX) companies shows a marginal increase from 14.55 (14.75) to 14.62 (15.00) from 2017 to 2019. These low scores are attributed to three elements, i.e. materiality, completeness
and responsiveness where ASX and NZX companies perform poorly across the sample. From a stakeholder-agency lens perspective these findings indicate that the assurance statement lacks stakeholder engagement. Further, we note that there is room for improvement in three elements, i.e. addressee, the objective of assurance, and conclusion for both ASX and NZX companies.

4.3 Determinants of Sustainability Assurance Statement Quality

Table 4 presents the descriptive statistics of the variables included in our study. The mean of the dependent variable (0.50) shows that the assurance statements produced by the sample firms are of reasonable quality. With reference to the audit committee’s characteristics, we find that our sample companies’ committees comprise a greater number of independent directors (86%), with 97% of them have at least one member demonstrating industry expertise. The audit committee meeting attendance mean value (98%) suggests that members of the audit committee in our sample companies regularly attend meetings. On average, the audit committee in our sample consists of three directors (antilog of 1.609). The mean value of board size suggests that on average the boards in our sample companies had five directors (antilog of 2.245) with 78% of them being independent. In terms of companies’ financial position, we found on average our sample companies generate 4.8% of return on assets (ROA) and a market-to-book ratio of 2.8. Finally, we find on average our sample companies hold 11.5 million of the assets (antilog of 23.5).

Table 5’s results report the pairwise correlation coefficient for explanatory variables and control variables. The results of the Pearson coefficient are well below the threshold, at 0.80, indicating there is no multicollinearity issue among explanatory and control variables.

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*Multicollinearity refers to when two or more explanatory variables in multiple regression are highly correlated with each other. In such cases where multicollinearity is evident, the result showing the effect of explanatory variables on dependent variables will be biased.*

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Table 6 reports the regression results concerning the impact of audit committee characteristics on the sustainability assurance quality. Models (1) – (4) report the results for individual characteristics of the audit committee on sustainability assurance quality, while model (5) shows the outcome of the bundle effect\(^8\) (combining effect of audit committee characteristics). From models (1) to (5), we find support for all our hypotheses except audit committee size ($AC_{\text{SIZE}}$), which remains insignificant ($\beta = -0.007, p > 0.10$), so H4 is rejected. Specifically, we find the coefficients for independence ($AC_{\text{independence}}$) ($\beta = 0.196, p < 0.05$), industry expertise ($AC_{\text{industry expertise}}$) ($\beta = 0.046, p < 0.05$), and meeting attendance ($AC_{\text{meeting attendance}}$) ($\beta = 0.368, p < 0.05$) are all statistically positive and significant at the 5% level. These provide strong support for hypotheses $H1$, $H2$ and $H3$. When we test the audit committee characteristics bundle on sustainability assurance quality (model 5), we find that the coefficients of independence ($AC_{\text{independence}}$) ($\beta = 0.231, p < 0.05$), industry expertise ($AC_{\text{industry expertise}}$) ($\beta = 0.085, p < 0.05$), and meeting attendance ($AC_{\text{meeting attendance}}$) ($\beta = 0.358, p < 0.05$) are all positive and significant. Similarly, the audit committee size continues to remain insignificant under the bundle effect. This particular result is consistent with prior studies that do not find any association between audit committee size and companies’ intention to pursue sustainability assurance (Al-Shaer & Zaman, 2018). Overall, our results indicate those audit committee members who are independent, have industry expertise, and regularly attend committee meetings are in a better position to reduce stakeholder-agency problems. They can do this by improving sustainability assurance statement quality. Our results also have economic significance in the sense that one standard deviation change in audit committee independence, industry expertise and meeting attendance changes the expected sustainability assurance quality by 9.8%, 2.8% and 2.5%, respectively.

\(^8\) We test the bundle effect as these characteristics do not operate in isolation.
sustainability assurance statement quality. This finding confirms the complex nature of the board of directors (Boivie et al., 2016), suggesting that directors only improve sustainability assurance statement quality and impartially so, when they are on the audit committee. We fail to find any association between market-to-book ratio (MTB: $\beta = 0.0979, p > 0.10$) and materiality assessment disclosure scores, indicating corporate market performance does not correlate with sustainability assurance statement quality.

5 Discussion and conclusion

This study addresses two research questions: (i) what is the extent of sustainability assurance statement quality? and (ii) do internal audit committee characteristics (size, audit committee independence, members’ industry expertise, and members’ attending at meetings) influence sustainability assurance statement quality? To answer these queries, a content analysis of sustainability assurance statements published by the top 100 ASX and NZX companies over three years (2017-2019) was carried out. A content analysis was used to evaluate the extent of sustainability assurance statement quality, while the determinants/audit committee characteristics were examined using regression analysis.

The content analysis reveals that ASX companies lead their NZX counterparts in both sustainability reporting and sustainability assurance. Overall, we find improvement in sustainability reporting rates amongst both Australian and New Zealand companies. However, sustainability assurance rates among ASX and NZX companies remained significantly low. The sustainability assurance market in Australia and New Zealand is dominated by ASAPs, with the majority of assurees prefer to use their own financial auditor to undertake sustainability assurance work. The sustainability assurance market is dominated by the Big 4, of which Ernst and Young (EY) had the highest market share in Australia, while Deloitte dominates the New Zealand market. In terms of sustainability assurance quality, we did not find any significant difference in Australian and New Zealand companies during the three years.

However, overall, our findings indicate that sustainability assurance statements published by these countries’ sample companies are of poor quality. This is because the ASX and NZX companies lag behind in three elements of materiality, completeness and responsiveness. These

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9 We have also used an alternative measure of corporate market performance, i.e. Tobin’s Q. We measured Tobin’s Q as market value of equity + book value of equity – deferred tax / book value of assets. The statistically insignificant result of Tobin’s Q confirms our earlier contention that market performance does not matter in terms of sustainability assurance statement quality.
results are interesting because, on one hand, we see a significant increase in sustainability reporting, with companies claiming to be more responsible to stakeholders. Yet, sustainability assurance rates (a key mechanism that awards credibility to such reports), as well as sustainability assurance quality, remained poor. The literature notes three reasons for this: lack of time and resources; weak underlying systems and processes; and the fear of negative assurance opinions (Farooq & De Villiers, 2017, 2019a) for poor sustainability assurance quality. These results indicate that sustainability assurance in Australia and New Zealand is likely to play a limited role in addressing stakeholder-agency conflicts (Boiral & Heras-Saizarbitoria, 2020; Deegan et al., 2006a; Gillet-Monjarret, 2015; Nilipour et al., 2017; Nilipour, 2016; O'Dwyer & Owen, 2007).

Such results motivate our second research question in which we seek to identify the determinants of sustainability assurance statement quality. More specifically, we examine whether internal audit committee characteristics improve sustainability assurance quality. Our findings indicate those audit committees’ where members are independent, have industry expertise, and who regularly attend committee meetings are in a better position to reduce stakeholder-agency problems by improving the quality of sustainability assurance statement. However, we fail to find any association between audit committee size and sustainability assurance statement quality. We add to the literature finding that a large number of directors on the board committee increases differences among them and results in delayed/poor decision-making (Al-Shaer & Zaman, 2018).

Our study makes three valuable contributions. Firstly, our findings add to the sustainability assurance literature by exploring the current trends in assurance practices in Australia and New Zealand. Sustainability assurance remains a voluntary undertaking and the market is still evolving (Farooq & De Villiers, 2017; Nilipour, 2016). This research helps to track the pace of sustainability assurance developments in Australia and New Zealand especially after recent regulatory reforms (i.e. in 2014 the Australian Securities Exchange (ASX) and 2017 New Zealand Stock Exchange (NZX) revised its corporate governance code) which introduced new guidelines encouraging listed entities to engage in sustainability reporting. Also, the revised assurance standard ISAE3000 of 2015 and the new GRI standards of 2016 have heightened the importance of sustainability reporting for boards. These regulations now demand external assurance of companies’ financial disclosures (Gillet-Monjarret, 2018).

Secondly our study contributes to the audit committee literature by highlighting the role played by the audit committee composition on sustainability assurance quality. Prior studies commenting on the role of internal audit committees suggest that committee characteristics
significantly influence companies’ decisions to undertake external assurance of their sustainability reports. However, we also extend the literature by arguing that the composition of audit committees matters in improving sustainability assurance quality. Thirdly and finally, our study offers useful findings to practitioners, standard setters and regulators, all of which consider the audit committee a key mechanism to ensuring the quality of audits (AUASB, 2017). We provide novel evidence that the presence of an effective audit committee (independent members, members’ industry expertise, and their regular attendance at meetings) has the potential to reduce stakeholder-agency conflicts by improving sustainability statement assurance quality.

This study is limited to the identification and testing of internal audit committee characteristics. Future researchers should consider the impact of other corporate characteristics, such as ownership structure, media coverage and gender diversity, on sustainability statement assurance quality. As well, the cost of assurance varies directly with the quality of assurance statement information. Future researchers should also consider incorporating this variable in their analyses to offer a more nuanced discussion of sustainability statement assurance quality. Finally, we only focus on the Australian and Zealand markets, so others researcher may consider exploring the sustainability assurance statement quality in developing market economies, where the contextual peculiarities may provide unique insights.
Appendix A:
Variables Definitions

| Variable                          | Definitions                                                                                     | Sources                        |
|----------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------|
| **Dependent variables**          |                                                                                               |                               |
| Sustainability Assurance Quality | Sustainability reports assurance quality score captured through content analysis of sustainability reports. | Authors calculation based on prior literature. |
| **Independent variables**        |                                                                                               |                               |
| AC independence                  | The proportion of independent directors to total directors on the audit committee               |                               |
| AC industry expertise            | Bloomberg score based on the presence of one independent director on the audit committee with relevant industry knowledge. | Bloomberg database            |
| AC meeting attendance            | Audit committee board member meeting attendance.                                               |                               |
| Ln (AC size)                     | Natural logarithm of one plus number of directors on the audit committee                        |                               |
| **Control variables**            |                                                                                               |                               |
| Board size                       | Total number of directors on the board                                                          | Bloomberg database            |
| Board independence               | The proportion of independent directors to total directors on board                              |                               |
| ROA                              | The ratio of net income to total asset                                                          |                               |
| Firm size                        | Firm size calculated as the natural logarithm of total assets                                   | Compustat database            |
| MTB                              | The market-to-book ratio = (Total Assets – Common Equity + Price Close * Common Shares Outstanding)/Total Assets |                               |
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### Table 1: Sustainability Assurance Evaluation Framework

| No. | Ranking criteria | Definition | Score | Scoring technique |
|-----|------------------|------------|-------|-------------------|
| 1   | Addressee        | Name of the party to whom assurance statement is addressed | 0     | No reference provided |
|     |                  |            | 1     | If addressee is management, company or internal party |
|     |                  |            | 2     | if stakeholder is mentioned |
| 2   | Responsibilities of assurance provider | Clear statement that assurance provider is responsible for expressing an (independent) opinion on the subject matter of sustainability report | 0     | No reference provided |
|     |                  |            | 1     | Reference provided |
| 3   | Independence    | Clear statement expressing the independence of all the parties involved | 0     | No reference provided |
|     |                  |            | 1     | A general statement expressing independence o |
|     |                  |            | 2     | A specific reference to ethical compliance with IFAC code |
| 4   | Objective of assurance | Objective to be achieved with assurance engagement (including assurance level) | 0     | No reference provided |
|     |                  |            | 1     | Limited assurance |
|     |                  |            | 2     | Reasonable or both |
| 5   | Scope of assurance engagement | Assurance statement coverage | 0     | No reference provided |
|     |                  |            | 1     | Reference to Environmental data or information |
|     |                  |            | 2     | Reference to multiple sections of report |
|     |                  |            | 3     | Reference to complete/full report |
| 6   | Assurance criteria | Statement identifying criteria used to prepare sustainability report | 0     | No reference provided |
|     |                  |            | 1     | Reference to criteria which is not publicly available |
|     |                  |            | 2     | Reference to criteria which is publicly available |
| 7   | Assurance standard(s) used | The standards used to govern the work of assurance provider (e.g. ISAE3000, AA1000AS, etc.) | 0     | No reference provided |
|     |                  |            | 1     | Reference to criteria which is not publicly available |
|     |                  |            | 2     | Reference to publicly available local criteria |
|     |                  |            | 3     | Reference to AA1000AS or ISAE3000 |
| 8   | Summary of assurance work | The list of actions taken to express opinion and conclusion | 0     | No reference provided |
|     |                  |            | 1     | Reference provided |
| 9   | Materiality      | Degree of information provision on materiality level | 0     | No reference provided |
|     |                  |            | 1     | Reference to a statement "all material aspects/respects" but also claims that assurance provider has not performed procedures to confirm that all material issues are included. |
Reference and explanation of materiality setting, or reference limited to a broad statement and stakeholder perspective introduced.

An explicit reference and explanation have been given to include stakeholder perspective in materiality settings.

| 10  | Completeness | An explicit statement about the coverage of all aspects of sustainability report. | 0 | No reference provided | 1 | Reference provided |
|-----|--------------|--------------------------------------------------------------------------------|---|-----------------------|---|---------------------|
| 11  | Responsiveness | A statement explaining the processes and procedures adopted to identify stakeholders’ interests and concerns | 0 | No reference provided | 1 | Reference provided |
| 12  | Conclusion/opinion | A statement expressing the outcome of sustainability assurance exercise | 0 | No reference provided | 1 | A simple statement expressing the opinion of assurance provider | 2 | An explanatory statement identifying recommendations for improvement |
Table 2: Analysis of sustainability assurance

|                          | 2017 | 2018 | 2019 | Total |
|--------------------------|------|------|------|-------|
|                          | N    | %    | N    | %    | N    | %    | N    | %    |
| **Panel A: Australian Listed Companies** |      |      |      |       |
| **Sustainability reporting rates** |      |      |      |       |
| Sustainability reporters | 93   | 93%  | 96   | 96%  | 98   | 98%  | 287  | 96%  |
| Non reporters            | 7    | 7%   | 4    | 4%   | 2    | 2%   | 13   | 4%   |
|                          | 100  | 100% | 100  | 100% | 100  | 100% | 300  | 100% |
| **Sustainability assurance rates** |      |      |      |       |
| Assuree/s                | 22   | 24%  | 38   | 40%  | 39   | 40%  | 99   | 35%  |
| Non-Assuree/s            | 71   | 76%  | 58   | 60%  | 59   | 60%  | 188  | 65%  |
|                          | 93   | 100% | 96   | 100% | 98   | 100% | 287  | 100% |
| **SAP type** |      |      |      |       |
| Accountants/ASAPs        | 22   | 100% | 37   | 97%  | 38   | 97%  | 97   | 98%  |
| Non-Accountants/NASAPs   | 0    | 0%   | 1    | 3%   | 1    | 3%   | 2    | 2%   |
| Total                    | 22   | 100% | 38   | 100% | 39   | 100% | 99   | 100% |
| **SAP and financial auditor** |      |      |      |       |
| SAP is also financial auditor | 17  | 77%  | 25   | 66%  | 30   | 77%  | 72   | 73%  |
| SAP is not financial auditor | 5   | 23%  | 13   | 34%  | 9    | 23%  | 27   | 27%  |
| Total                    | 22   | 100% | 38   | 100% | 39   | 100% | 99   | 100% |
| **ASAPs breakdown**      |      |      |      |       |
| Big-Four                 | 22   | 100% | 36   | 97%  | 38   | 100% | 96   | 99%  |
| Non-Big-Four             | 0    | 0%   | 1    | 3%   | 0    | 0%   | 1    | 1%   |
| Total                    | 22   | 100% | 37   | 100% | 38   | 100% | 97   | 100% |
| **Big-Four breakdown**   |      |      |      |       |
| KPMG                     | 8    | 36%  | 9    | 25%  | 9    | 24%  | 26   | 27%  |
| Deloitte                 | 3    | 14%  | 7    | 19%  | 6    | 16%  | 16   | 17%  |
| EY                       | 9    | 41%  | 17   | 47%  | 19   | 50%  | 45   | 47%  |
| PwC                      | 2    | 9%   | 3    | 8%   | 4    | 11%  | 9    | 9%   |
| Total                    | 22   | 100% | 36   | 100% | 38   | 100% | 96   | 100% |
| **Panel B: New Zealand Listed Companies** |      |      |      |       |
| **Sustainability reporting rates** |      |      |      |       |
| Sustainability reporters | 34   | 34%  | 54   | 54%  | 81   | 81%  | 169  | 56%  |
| Non reporters            | 66   | 66%  | 46   | 46%  | 19   | 19%  | 131  | 44%  |
|                          | 100  | 100% | 100  | 100% | 100  | 100% | 300  | 100% |
| **Sustainability assurance rates** |      |      |      |       |
| Assuree/s                | 4    | 12%  | 7    | 13%  | 8    | 10%  | 19   | 11%  |
| Non-Assuree/s            | 30   | 88%  | 47   | 87%  | 73   | 90%  | 150  | 89%  |
|                          | 34   | 100% | 54   | 100% | 81   | 100% | 169  | 100% |
| **SAP type** |      |      |      |       |
| Accountants/ASAPs | 4 | 100% | 5 | 71% | 6 | 75% | 15 | 79% |
| Non-Accountants/NASAPs | 0 | 0% | 2 | 29% | 2 | 25% | 4 | 21% |
| **Total** | **4** | **100%** | **7** | **100%** | **8** | **100%** | **19** | **100%** |

**SAP and financial auditor**

| SAP is also financial auditor | 2 | 50% | 3 | 43% | 4 | 50% | 9 | 47% |
| SAP is not financial auditor | 2 | 50% | 4 | 57% | 4 | 50% | 10 | 53% |
| **Total** | **4** | **100%** | **7** | **100%** | **8** | **100%** | **19** | **100%** |

**ASAPs breakdown**

| Big-Four | 4 | 100% | 5 | 100% | 6 | 100% | 15 | 100% |
| Non-Big-Four | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| **Total** | **4** | **100%** | **5** | **100%** | **6** | **100%** | **15** | **100%** |

**Big-Four breakdown**

| KPMG | 1 | 25% | 1 | 20% | 1 | 17% | 3 | 20% |
| Deloitte | 1 | 25% | 3 | 60% | 3 | 50% | 7 | 47% |
| EY | 2 | 50% | 1 | 20% | 2 | 33% | 5 | 33% |
| PwC | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| **Total** | **4** | **100%** | **5** | **100%** | **6** | **100%** | **15** | **100%** |
Table 3: Sustainability Reporting Assurance Quality Content Analysis

Panel A: Sustainability Reporting Assurance Quality in Australian Companies

| S No. | Contents               | 2017 (SA Statements = 22) | 2018 (SA Statements = 38) | 2019 (SA Statements = 39) | Total (SA Statements = 99) |
|-------|------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
|       |                        | Raw Score | Average Score | Raw Score | Average Score | Raw Score | Average Score | Raw Score | Average Score |
| 1     | Addressee              | 22        | 1.00         | 39        | 1.03         | 39        | 1.00         | 100        | 1.01         |
| 2     | Responsibility of parties | 21       | 0.95         | 38        | 1.00         | 37        | 0.95         | 96         | 0.97         |
| 3     | Independence           | 41        | 1.86         | 73        | 1.92         | 72        | 1.85         | 186        | 1.88         |
| 4     | Objective of assurance | 27        | 1.23         | 48        | 1.26         | 47        | 1.21         | 122        | 1.23         |
| 5     | Scope of assurance     | 43        | 1.95         | 79        | 2.08         | 77        | 1.97         | 199        | 2.01         |
| 6     | Assurance criteria     | 37        | 1.68         | 42        | 1.11         | 65        | 1.67         | 144        | 1.45         |
| 7     | Assurance standard used| 52        | 2.36         | 99        | 2.61         | 92        | 2.36         | 243        | 2.45         |
| 8     | Summary of assurance work | 21       | 0.95         | 38        | 1.00         | 38        | 0.97         | 97         | 0.98         |
| 9     | Materiality            | 22        | 1.00         | 41        | 1.08         | 41        | 1.05         | 104        | 1.05         |
| 10    | Completeness           | 2         | 0.09         | 6         | 0.16         | 4         | 0.10         | 12         | 0.12         |
| 11    | Responsiveness         | 2         | 0.09         | 5         | 0.13         | 5         | 0.13         | 12         | 0.12         |
| 12    | Conclusion             | 22        | 1.00         | 41        | 1.08         | 40        | 1.03         | 103        | 1.04         |
|       | **Sum of Average Score** | **14.18** | | **14.45** | | **14.28** | | **14.32** |

Panel B: Sustainability Reporting Assurance Quality in New Zealand Companies

| S.No  | Contents               | 2017 (SA Statements = 4) | 2018 (SA Statements = 7) | 2019 (SA Statements = 8) | Total (SA Statements = 19) |
|-------|------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
|       |                        | Raw Score | Average Score | Raw Score | Average Score | Raw Score | Average Score | Raw Score | Average Score |
| 1     | Addressee              | 4        | 1.00         | 6        | 0.86         | 8        | 1.00         | 18        | 0.95         |
| 2     | Responsibility of parties | 4        | 1.00         | 7        | 1.00         | 8        | 1.00         | 19        | 1.00         |
| 3     | Independence           | 8        | 2.00         | 11       | 1.57         | 13       | 1.63         | 32        | 1.68         |
This Table reports the content analysis of sustainability assurance (SA) quality items based on Appendix A across sample period (2017-2019). Panel A reports the content analysis results for Australian listed companies while Panel B presents the results of top 100 New Zealand listed companies. Of note the Average score in the column is calculated by dividing the raw score over the number of SA statements.
Table 4: Descriptive Statistics

| N | Mean | Std. | P25  | Median | P75  |
|---|------|------|------|--------|------|
| Panel A: Dependent variable |
| Sustainability Assurance Quality | 113  | 0.500 | 0.070 | 0.450  | 0.490 | 0.530 |
| Panel B: Independent variables |
| AC independence | 113  | 0.886 | 0.210 | 0.833  | 1.000 | 1.000 |
| AC industry expertise | 113  | 0.971 | 0.161 | 1.000  | 1.000 | 1.000 |
| AC meeting attendance | 113  | 0.981 | 0.035 | 0.975  | 1.000 | 1.000 |
| Ln (AC size) | 113  | 1.609 | 0.157 | 1.609  | 1.609 | 1.609 |
| Panel C: Control Variables |
| Ln (Board size) | 113  | 2.245 | 0.160 | 2.197  | 2.197 | 2.398 |
| Board independence | 113  | 0.779 | 0.189 | 0.727  | .833  | 0.889 |
| ROA | 113  | 0.048 | 0.044 | 0.015  | .038  | 0.071 |
| Firm size | 113  | 23.445 | 1.764 | 22.754 | 23.362 | 24.118 |
| MTB | 113  | 2.793 | 4.405 | 1.108  | 1.599 | 2.365 |
Table 5: Correlation analysis

| Variables                  | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|---------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------|
| (1) Sustainability Assurance Quality | 1.000 |     |     |     |     |     |     |     |     |       |
| (2) AC independence       | 0.037 | 1.000 |     |     |     |     |     |     |     |       |
| (3) AC industry expertise | 0.022 | 0.078 | 1.000 |     |     |     |     |     |     |       |
| (4) AC meeting attendance | 0.132 | 0.144 | -0.021 | 1.000 |     |     |     |     |     |       |
| (5) Ln (AC size)          | -0.038 | -0.050 | -0.099 | 0.070 | 1.000 |     |     |     |     |       |
| (6) Ln (Board size)       | 0.055 | -0.081 | -0.157 | 0.081 | 0.289 | 1.000 |     |     |     |       |
| (7) Board independence    | -0.016 | 0.609 | 0.185 | 0.045 | 0.054 | -0.134 | 1.000 |     |     |       |
| (8) ROA                   | 0.102 | 0.179 | 0.069 | -0.003 | -0.285 | -0.069 | 0.120 | 1.000 |     |       |
| (9) Firm size             | 0.187 | 0.275 | 0.193 | 0.164 | 0.212 | 0.320 | 0.291 | -0.331 | 1.000 |       |
| (10) MTB                  | 0.030 | 0.134 | 0.052 | 0.020 | -0.237 | -0.042 | 0.080 | 0.069 | -0.010 | 1.000 |
Table 6:  
**Internal Audit committee characteristics and Sustainability Assurance quality**

|                                | (1)       | (2)       | (3)       | (4)       | (5)       |
|--------------------------------|-----------|-----------|-----------|-----------|-----------|
| **Sustainability Assurance Quality Score** |           |           |           |           |           |
| **AC independence**           | 0.196**   | 0.231**   |           |           |           |
|                               | (2.12)    | (2.64)    |           |           |           |
| **AC industry expertise**     | 0.046**   | 0.085**   |           |           |           |
|                               | (2.63)    | (2.28)    |           |           |           |
| **AC meeting attendance**     | 0.368**   | 0.358**   |           |           |           |
|                               | (2.52)    | (2.28)    |           |           |           |
| **Ln (AC size)**              |           |           | 0.007     | 0.024     |           |
|                               |           |           | (-0.15)   | (0.58)    |           |
| **Ln (Board size)**           | 0.014     | -0.011    | 0.005     | -0.000    | 0.002     |
|                               | (0.14)    | (-0.11)   | (0.05)    | (-0.00)   | (0.02)    |
| **Board independence**        | -0.264*** | -0.068    | -0.075    | -0.065    | -0.315*** |
|                               | (-4.63)   | (-0.89)   | (-0.95)   | (-0.85)   | (-4.93)   |
| **ROA**                       | 0.603**   | 0.649**   | 0.608**   | 0.635**   | 0.600***  |
|                               | (2.62)    | (2.65)    | (2.50)    | (2.67)    | (2.85)    |
| **Firm size**                 | 0.026*    | 0.026*    | 0.025*    | 0.025*    | 0.029**   |
|                               | (1.98)    | (1.89)    | (1.80)    | (1.78)    | (2.12)    |
| **MTB**                       | 0.001     | 0.001     | 0.001     | 0.001     | 0.001     |
|                               | (0.24)    | (0.61)    | (0.98)    | (0.65)    | (0.35)    |
| **Industry & Year FE**        | Yes       | Yes       | Yes       | Yes       | Yes       |
| **F test p-value**            | 0.000     | 0.000     | 0.000     | 0.000     | 0.000     |
| **Observations**              | 113       | 113       | 113       | 113       | 113       |
| **Adjusted R2**               | 0.181     | 0.134     | 0.153     | 0.128     | 0.196     |