Informativeness of Fair Value Adjustments on Investment Properties: Relevance of Covenant Violation Concerns, Auditor Expertise, and Supplementary Disclosures

Submitted by

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Abstract

Even a decade after the enactment of IFRS 13 *Fair Value Measurement*, questions remain about faithful representation and usefulness *vis-à-vis* the perceived informativeness of fair values, especially those with unobservable inputs (i.e., Level 3 estimates). Prior studies show that fair value adjustments reflect private information and improve the relevance of the asset valuation if managers adopt efficient accounting choices. However, the permitted discretion also allows managers to act opportunistically and hinder faithful representation. Contracting incentives can exacerbate the opportunistic exercise of the fair value measurement discretion, and effective monitoring can mitigate it. Firms may also signal the quality of fair values by providing extended measurement-related disclosures.

This thesis investigates the factors affecting the perceived informativeness of the changes in fair value estimates of investment properties, specifically focusing on three areas: the borrowing covenant violation concerns of investors, the fair value expertise of auditors, and supplementary fair value disclosures in times of market uncertainty. The investigation is conducted in three separate but related empirical studies in the context of fair value accounting for investment properties under IAS 40 in the Australian real estate sector.

The first study investigates the influence of closeness to the violation of borrowing covenants on investors' valuation of Level 3 fair value adjustments. Utilising the high-levered nature of the real estate sector, I reason that the concern of managerial bias in fair value estimation is greater for firms that are closer to violating, or have violated, borrowing covenants than those that are far from violation. Results indicate that while fair value adjustments are priced positively, investors

incrementally apply a discount for real estate firms closer to violation or in technical default of their borrowing covenants. Breaking down borrowings by maturity and security shows that investors' pricing of fair value adjustments is significantly lower among firms with higher secured borrowing and higher long-term borrowing but greater for firms with higher long-term unsecured borrowing.

The second study examines the influence of auditor fair value expertise, gained through engagement tenure and industry specialisation, on the perceived reporting quality of the changes in Level 3 fair values. I capture auditor fair value expertise both at the audit firm and partner level. Findings suggest that investors' valuation of fair value adjustments is higher for medium-tenure audit firms, whereas longer-tenure firms have no significant influence. However, when upward adjustments are examined separately, results show that the benefits of firm tenure accrue even for the longer engagements. Further, the perceived reporting quality of fair value adjustments is higher when partners have more than two years of experience. Contrary to expectation, I find no incremental valuation implication in engaging industry specialists, either at the firm level (city or national) or at the partner level.

The third study examines the relevance of supplementary disclosures during the uncertain market of 2020. I develop a disclosure index based on the supplementary disclosures about Level 3 fair values and ascertain their effects on audit fees and the market value of fair value adjustments. Results suggest that managers considered the potential negative impact of the market uncertainty during the COVID-19 pandemic on the representational faithfulness of fair values and enhanced fair value disclosures. The finding that the audit fee is negatively associated with the supplementary disclosures indicates the relevance of additional disclosures in alleviating the perceived audit risk. Further, I find that supplementary disclosures

increased the value relevance of fair value adjustments during 2020 but, in the pre-uncertainty period, they had no significant valuation implication.

Overall, this thesis contributes to the growing body of literature on the value relevance of fair value measurements by adding closeness to borrowing covenant violation as a potential driver of perceived managerial bias and discount on fair values. Addressing the recent discussion around the deficiencies in the auditing of Level 3 fair value estimates even by Big 4 audit firms, the findings of this thesis highlight the importance of auditor fair value expertise obtained through engagement tenure in mitigating faithful representation concerns. Furthermore, the results contribute to the ongoing debate about the usefulness of additional fair value disclosures by providing evidence that supplementary disclosures can reduce the audit risk effect by signalling higher transparency and ensuring more reliable fair value reporting, particularly in volatile times. These results are, therefore, of interest to standard setters, regulators, managers of real estate firms, and other financial reporting stakeholders.

Keywords: Fair value measurement, investment properties, value relevance, borrowing covenant violation, corporate governance, auditor tenure, industry specialisation, supplementary fair value disclosure, audit fee, market uncertainty.

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List of Abbreviations

AASB	Australian Accounting Standards Board
ACGTI	Australian Corporate Governance Transparency Index
ASIC	Australian Securities and Investments Commission
ASX	Australian Securities Exchange
CAANZ	Chartered Accountants Australia and New Zealand
CEO	Chief executive officer
DTT	Deloitte
EY	Ernst & Young
EU	European Union
EBITDAFVA	Earnings before interest, taxes, depreciation, amortisation and fair value adjustments
FAPI	Fellow of the Australian Property Institute
FAS	Financial Accounting Standards
GAAP	Generally Accepted Accounting Principles
GFC	Global financial crisis
IAS	International Accounting Standards
IASB	International Accounting Standards Board
IFRS	International Financial Reporting Standards
IMR	Inverse mills ratio
NAV	Net asset value
OCI	Other comprehensive income
PCAOB	Public Company Accounting Oversight Board
PIR	Post-implementation review
P&P	Properties & Pathways
PwC	PricewaterhouseCoopers
RICS	Royal Institution of Chartered Surveyors
SFAS	Statement of Financial Accounting Standards
US	United States
UK	United Kingdom
VIF	Variance inflation factor

Attestation of Authorship

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.

Signature

Laura Mehnaz

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CHAPTER ONE:

INTRODUCTION

1.1 Motivations and Research Questions

The focus of this thesis on fair value adjustments[1] to investment properties is motivated by the provision of IAS 40 *Investment Property* to recognise investment properties at fair values[2] (IAS 40.30) and the reporting of changes in values through earnings (IAS 40.35). Gains and losses on investment properties flow through net income not only when they are realised but also when managers report any changes in an asset's value, i.e., unrealised gains/losses, which is permitted for only a few asset classes[3] by the International Financial Reporting Standards (IFRS). This section provides a brief overview of the challenges of fair value reporting, especially for the unobservable estimates; it then identifies the research problems that need attention to extend understanding of informativeness of fair values but remain underexplored in fair value accounting literature; and, finally, it discusses the research context utilised to investigate the questions.

The nature of fair value is such that even well-intentioned experts can disagree on adjustments, and more so when a property's value is not observable in the market (Bratten et al., 2013). For example, considering the lack of comparable market prices,

[1] Throughout this thesis, I use the terms 'fair value adjustments', 'changes in fair value estimates' and 'unrealised gains and losses' interchangeably.

[2] Effective since 2005, IAS 40 requires that investment properties initially be measured at cost (IAS 40.20) and subsequently recognised at fair values (IAS 40.30). The use of cost is permitted after initial recognition if the fair value is not measurable reliably (IAS 40:53). However, firms can use only one method for the entire array of investment property.

[3] For most cases, changes in fair value estimates are included in other comprehensive income, such as: unrealised gains and losses on the fair value of derivative contracts, foreign currency translation adjustments, unrealised gains and losses on the fair value of available for sale investment securities, and pension liability adjustments. Furthermore, any revaluation gain arising on account of an increase in property, plant and equipment value is also shown under comprehensive income (AASB 116: 39).

Aspen Group appointed two independent valuers to estimate the fair value of a property in 2016. The first valuer estimated AUD 12 million valuation, and the second valuer estimated AUD 17 million. The sensitivity analysis in the notes to the financial statements shows that this significant difference in the valuation was simply due to a slight variation in model assumptions such as occupancy rate, capitalisation rate, and average cost margin that the valuers used (Aspen Group, 2016, p. 52).

The International Accounting Standards Board (IASB) states that the use of the fair value model to report investment properties is necessary for reporting financial performance in a meaningful way (IASB 2003, para. BC44). As per Bandyopadhyay et al. (2017), if managers adopt efficient accounting choices, fair value adjustments reflect their private information and improve the relevance of the estimation. But if managers are opportunistic, they might use the permitted discretion to manipulate adjustments and hinder the faithful representation of the reported amounts (Dietrich et al., 2000). This means fair value adjustments can include both information and noninformation components (Kanagaretnam et al., 2009).

IFRS 13 *Fair Value Measurement* provides a three-level hierarchy to apply to the measurement of fair values based on the nature of the inputs used in estimation: Level 1 inputs are observable quoted prices in active markets; Level 2 inputs are indirectly observable from similar items in active markets; and Level 3 are unobservable inputs developed internally based on managers' assessment of the best information available (IASB, 2011). Information risk is lower for Level 1 and Level 2 fair values, and investors consider them relevant and reliable for pricing decisions (Goh et al., 2015; Kolev, 2019; Song et al., 2010). However, Level 3 fair value estimates involve high measurement uncertainty because they rely on managerial discretion, use subjective and forward-looking assumptions, and are difficult to verify

(Bratten et al., 2013). They may also include measurement errors and induce managerial bias (Landsman, 2007; Penman, 2007).

Evidence on the informativeness of Level 3 fair value estimates[4] is inconclusive (Ayres, 2016; Kolev, 2019) and focuses exclusively on financial assets from the United States (US) banking sector. While Song et al. (2010) document that financial assets measured at Level 3 are priced at a discount relative to Level 1 and Level 2 valuations during the global financial crisis (GFC) of 2008, Goh et al. (2015) show that the discount is no longer significant when the market conditions stabilise. Lin et al. (2017) suggest that the use of Level 3 fair value reduces financial reporting quality.

In contrast to the majority of fair value accounting studies that focus on the financial assets (Barth, 1994; Barth et al., 1995; Eccher et al., 1996; Song et al., 2010), this thesis focuses on the fair value of investment properties of real estate firms, due to some of its unique features. First, investment properties constitute a relatively significant proportion of real estate firms' total assets, and the prices of most properties are not directly observable. On average, such properties represent 72 percent of the total assets in the sample of this study, mostly valued using Level 3 estimates. Second, adjustments made to the valuations per annum are significant; on average, they constitute 33 percent of the earnings before taxes of the sample firms and are reported directly through the net income rather than comprehensive income. This means that fair value adjustments are highly important to capital market participants in the real estate industry and the economic consequences of estimation errors are likely to be substantial. Third, unlike the banking sector, real estate is not heavily regulated and monitored, thus providing a setting where measurement

[4] The terms 'fair values', 'fair value estimates' and 'fair value measurements' have been used interchangeably throughout the thesis.

uncertainty for Level 3 properties is expected to be even higher. Finally, this setting permits the control of non-discretionary components of the reported fair value adjustments because of the readily accessible market-wide capital appreciation measures for investment properties[5] (Dietrich et al., 2000).

Moreover, Australia provides a strong setting due to the significance of the real estate industry in the overall economy. The industry revenue is set to rise at an annualised 2 percent over the five years through 2021-22, to $33 billion (IBISWorld database). Despite the turbulent economic conditions during 2020, incentives provided by the Australian Government and falling interest rates have accelerated growth in this sector over the period. The market size of the industry is increasing faster than the economy overall, indicating the importance of this sector. This setting is ideal for conducting fair value research because of its transparent institutional environment for accounting that ensures that IFRS are complied with (Kabir & Rahman, 2016). Furthermore, access to some of the variables of interest (e.g., audit partner tenure, upward adjustments) is possible in Australia, while it is not available in many other settings (e.g., in the US).

In the context of investment properties, existing research, predominantly based on United Kingdom (UK) and European real estate firms, indicates that fair value amounts are relevant for future financial outcomes, and investors place positive valuation weights on fair value estimates (Bandyopadhyay et al., 2017; Israeli, 2015; Müller et al., 2015). The Australian context is different from any other setting because revaluations of properties were allowed long before the adoption of IFRS, indicating that the measurement errors are less likely due to the long managerial experience

[5] For example, the Property Council of Australia periodically publishes a performance index of property returns, and hence the separation of the discretionary part of the fair value adjustments is possible to some extent.

with property valuations. Considering the absence of market-based evidence for Australia, this thesis begins with the following research question:

***RQ1*:** Are fair value adjustments to investment properties value relevant?

A distinguishing feature of real estate firms is that they tend to be highly levered (Barclay et al., 2013; Doan & Nguyen, 2018; Muller III et al., 2011), and interest charges constitute a significant portion of their total expenditures (Ooi et al., 2010). For the Australian real estate sector, I observed an average debt to asset ratio of 33 percent with a maximum ratio of 99 percent for the sample firms. Such high levels of debt in real estate firms provides an appropriate setting in which to capture perceived managerial bias arising out of concerns about borrowing covenant violations. Thus, in relation to the extant fair value studies covering banks that document closeness to the minimum capital adequacy ratio requirement as a reason for market discount on Level 3 fair values (Goh et al., 2015; Robinson et al., 2018), this thesis examines closeness to borrowing covenant violation as an added explanation of the discount.

Prior studies report that fair value reporting influences the financial covenants used in borrowing contracts (Demerjian et al., 2016). However, extant literature remains silent as to how investors react to the changes in the fair values when a firm is at high risk of violating (or has violated) a borrowing covenant. This is interesting because, on the one hand, managers act as if the violation of the borrowing covenant is costly (Beneish & Press, 1993) and use accounting discretion to avoid violation (Watts & Zimmerman, 1986). On the other hand, debt contracting can be efficient, with lenders acting as disciplining devices against managerial bias and forcing the efficient exercise of accounting discretion (AbuGhazaleh et al., 2011; Rajan & Winton, 1995). Few prior studies have indicated that the association between fixed asset revaluation amounts and future performance, prices, and returns is weaker for

highly levered firms (Aboody et al., 1999; Easton et al., 1993). However, studies have also shown no influence of high leverage on managers' decisions (DeAngelo et al., 1994; Healy & Palepu, 1990). These conflicting arguments motivate the second research question in this thesis:

RQ2: Do investors perceive a higher risk of managerial bias on fair value adjustments when real estate firms are closer to a violation or are in technical default of their borrowing covenant?

One way to address the faithful representational concern of Level 3 fair values is to have an effective monitoring system. The role of governance is critical because it monitors the exercise of accounting discretion (Bowen et al., 2008; Kabir & Rahman, 2016) and limits opportunism (Nazir & Afza, 2018). Previous studies show that stronger governance mitigates information asymmetry and increases the value relevance of Level 3 assets (Huang et al., 2016; Siekkinen, 2017; Song et al., 2010). Regarding the role of auditors, past research provides evidence of Big 4 and industry specialist auditors ensuring higher audit quality (Balsam et al., 2003; Becker et al., 1998) and contributing towards the higher value relevance of fair value measurements (Kanagaretnam et al., 2009; Lee & Park, 2013). However, the acquisition of specialised competence faces a 'learning curve', which means that auditors' expertise and work quality improve as tenure increases (DeAngelo, 1981; Myers et al., 2003). That is, auditors' experience gained through interaction with the client over time (referred to as engagement tenure) can affect audit quality. Also, it is possible that, beyond some length of tenure, auditor independence and objectivity are impaired due to 'closeness' with the client (Davis et al., 2007). This indicates that auditor tenure can influence the perceived reporting quality non-linearly.

A recent survey shows that the audit reports of almost every real estate firm contain the valuation of investment property as a key audit matter (Ernst & Young [EY], 2019, p. 22). Auditing fair value estimates is challenging (Bratten et al., 2013). Valuation models vary across different property classes, lack verifiable data, and are inherently complex, requiring the auditors to evaluate numerous cues for each estimate within uncertain environmental factors (Cannon & Bedard, 2017). The ability to effectively audit these models and their assumptions requires expertise related to accounting, finance, and economics (Bratten et al., 2013). This means that the expertise related to fair value verification can provide auditors with a competitive advantage and impact the quality of audit services, the reliability of disclosures, and the information risk associated with fair values (Ahn et al., 2020; Boone et al., 2008; Bratten et al., 2013). The relevance of auditor fair value expertise can be more prominent for the illiquid non-current asset group. Thus, the third research question of this thesis asks:

***RQ3*:** Does the fair value expertise of auditors obtained through engagement tenure and industry specialisation influence the perceived reporting quality of fair value adjustments to investment properties?

Volatile economic circumstances, such as those prevailing in 2020 due to the COVID-19 pandemic, increase the estimation risk of the Level 3 fair value of properties, for at least two reasons. First, fewer transactions are observable in the market, and it is difficult for real estate managers to precisely forecast Level 3 valuation inputs. Second, the potential that the estimated asset valuation would change materially and unexpectedly is high. Auditor task complexity increases with market volatility, which affects their audit fees. The increased estimation risk also likely enhances investors' faithful representational concerns, which subsequently can be reflected through a discount on Level 3 fair values (Goh et al., 2015; Song et al.,

2010). The disclosure literature shows that supplementary disclosures on fair value measurements can reduce estimation risk by enhancing the quality of existing disclosures and their reliability (Bagnoli & Watts, 2007; Bryan, 1997; Chung et al., 2017; Francis et al., 2002), and can help restore the confidence of auditors (Chen et al., 2019; Hong & Hwang, 2018; Yao et al., 2019) and investors (Francis et al., 2008; Healy & Palepu, 2001; Verrecchia, 2001; Weiss & Shon, 2017).

Prior studies (Ettredge et al., 2014; Goncharov et al., 2014; Sangchan et al., 2020) argue that a greater exposure to Level 3 fair value assets increases monitoring costs due to an increase in audit efforts and exposure to litigation risk. These studies examine the fair value exposure and the changes in fair values as determinants of audit fees, leaving the level of disclosures on them out of the scenario. The consideration of supplementary disclosures on fair value is important because, on the one hand, they facilitate audit risk assessment; and, on the other hand, they expose auditors to additional effort and reputational risk (Hong & Hwang, 2018; Yao et al., 2019). Chen et al. (2019) show that auditors charge higher audit fees for firms with more goodwill-related fair value disclosures due to a greater litigation risk associated with such discretionary disclosures. However, when information asymmetry is higher, auditors perceive such disclosures as a signal of truthful reporting. Extending arguments by Chen et al. (2019) to the Level 3 fair value of properties and utilising the market uncertainty of 2020, this thesis posits its fourth research question:

RQ4: Are supplementary fair value disclosures associated with audit fees, and is this association more pronounced during the market uncertainty of 2020?

Several studies focus on the informational role of additional disclosures on fair values. Chung et al. (2017) find that additional disclosures increase Level 3 financial assets' market pricing and reduce the information risk. On the contrary, Sundgren et al. (2018) show that additional disclosure on investment properties has

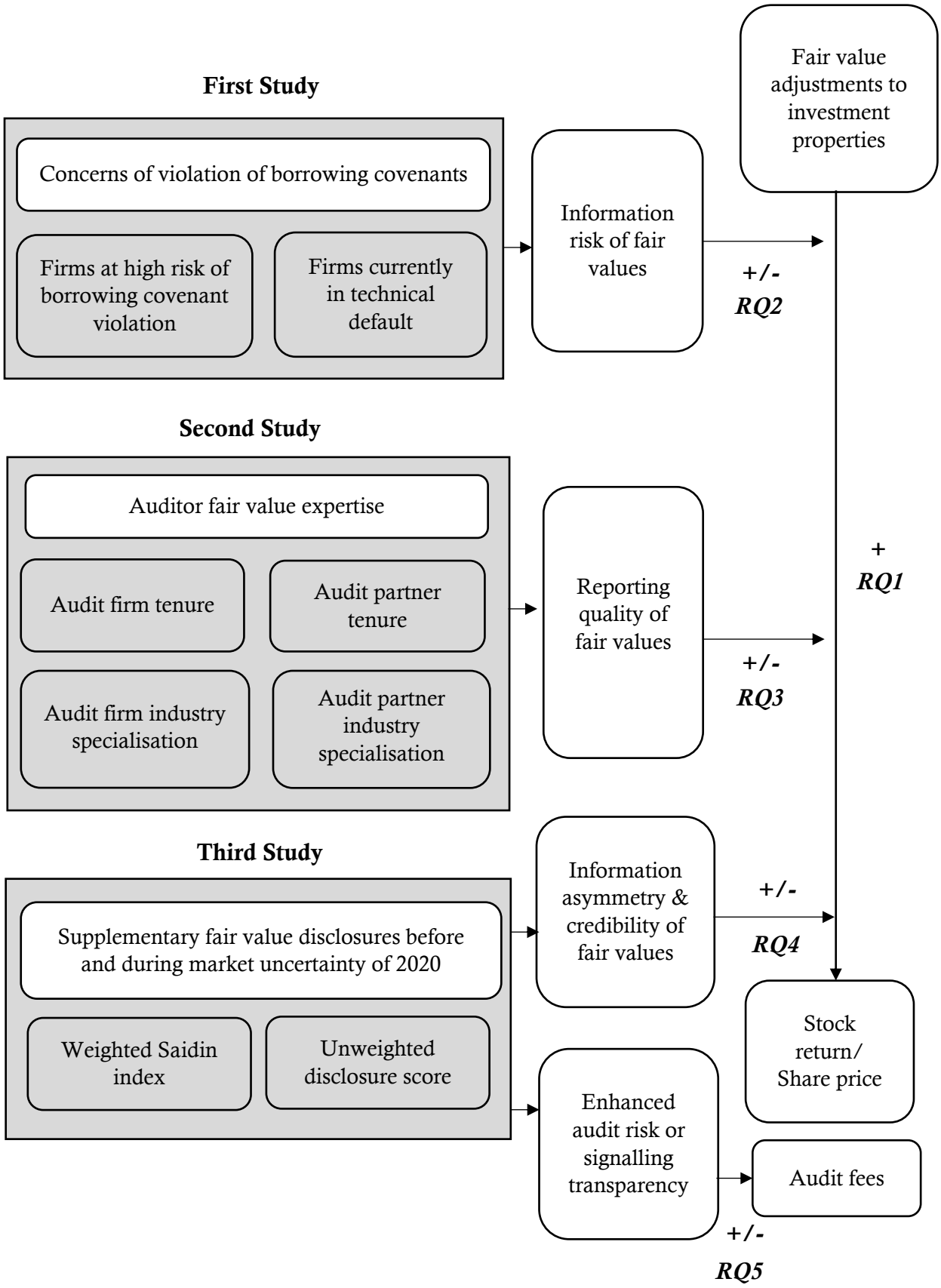
no positive influence on analyst coverage and market liquidity. Although the informational role of disclosure on fair value estimates is expected to be prominent during periods of market volatility (Boone et al., 2020; Kim & Park, 2009), studies that cover the 2008 GFC period fail to provide evidence supporting this notion. For example, Weiss and Shon (2017) and Vergauwe and Gaeremynck (2018) show that extended fair value disclosures do not unambiguously decrease information asymmetries during the 2008 GFC.

In the wake of COVID in 2020, there were severe concerns from preparers, managers, and auditors that the asset valuation estimated during distressed market conditions might be questioned by the users later on (Chartered Accountants Australia and New Zealand [CAANZ], 2020, p. 7). The Australian Securities and Investments Commission (ASIC) declared that the risk of being found deceptive is minimal if preparers provide sufficient disclosures (CAANZ, 2020). A relevant question that arises next is whether the additional disclosures mitigated the concern with the faithful representation of fair value adjustments at this uncertain time. Hence, the final research question of this thesis asks:

RQ5: Do supplementary fair value disclosures influence investors' pricing of fair value adjustments differently during the uncertainty of 2020 relative to the pre-uncertainty period?

This thesis addresses these five research questions in three separate but related empirical studies conducted in the context of accounting for investment properties post-IAS 40 adoption. *Figure 1.1* depicts a summary of the three empirical studies.

Figure 1.1: Summary of the empirical studies of the thesis



1.2 Summary of Main Research Findings

This thesis addresses the five research questions in three separate but related empirical studies, which are presented in three chapters. The studies are carried out in the context of accounting for investment properties post-IAS 40 adoption and using a sample of Australian real estate firms. *Table 1.1* depicts an overview of the thesis structure with research questions, empirically tested hypotheses, and the key findings.

Chapter Three, entitled "Covenant Violation Concerns and Investors' Pricing of Fair Value Adjustments", documents the research conducted in regard to the first two research questions of the thesis. I use a value relevance test based on the stock return model and report a significant positive association between fair value adjustments and stock returns, implying that investors place valuation weights on fair value adjustments. However, an incremental discount is observed for firms closer to the violation or in technical default of their borrowing covenants. This is consistent with investors' faithful representation concerns around Level 3 fair values arising out of closeness to a borrowing covenant violation. Results show that this discount effect varies across different borrowing categories. The market valuation of fair value adjustments is significantly lower for firms with higher secured borrowing and higher long-term borrowing. A further breakdown of long-term borrowing based on its secured nature reveals that the valuation discount happens only for firms with higher long-term secured borrowings. By contrast, investors think fair value adjustments are more informative if firms hold higher long-term unsecured borrowing. Additional analysis shows that the decremental valuation implication due to high gear is significant in the weaker governance sub-sample but not in the stronger governance sub-sample, indicating that concerns over closeness to a borrowing covenant violation can be contingent upon the strength of the governance mechanism.

Chapter Four, entitled "Does Auditor Fair Value Expertise Affect the Perceived Reporting Quality of Fair Value Adjustments?", addresses the third research question. This study captures auditor fair value expertise in two dimensions: (i) experience gained through engagement tenure; and (ii) knowledge obtained through industry specialisation, at audit firm level and audit partner level. Findings based on the stock return model indicate that, for both audit firm and audit partner, investors' value fair value expertise gained through engagement years. Investors perceive the reporting quality of fair value adjustments is higher for the medium-tenure audit firm than the short-tenure firm but, for longer-tenure auditors, the moderating influence is not significant. Although this result partially supports the non-linear association between audit firm tenure and reporting quality, a focus on upward fair value adjustments shows that the benefits of firm tenure accrue even for the longer engagements. Partner-level analysis documents that the investors' valuation of fair value adjustments is significantly higher after the first two years of partner appointment. Contrary to prior studies, the results on engaging industry specialist auditors indicate no incremental valuation effect at the firm level (city or national) and partner level.

Chapter Five, entitled "Relevance of Supplementary Fair Value Disclosures under Market Uncertainty: Effects on Audit Fees and Investors' Pricing" investigates the fourth and fifth research questions of the thesis. I develop a disclosure index based on the supplementary disclosures of IFRS 13 Level 3 fair value and measure the levels of disclosure of Australian real estate firms for the years 2018 to 2020. I find that managers increased supplementary disclosures during the market uncertainty of 2020. The disclosure of quantitative sensitivity analysis experienced the largest jump, from 6 percent in 2019 to 51 percent in 2020. Results based on the audit fee model indicate a negative association between audit fees and supplementary disclosures,

implying that additional disclosures reduce the audit risk effect by signalling higher transparency. Using the share price model, I further find that investors' pricing of fair value adjustments increases with the increase in disclosures in the uncertainty period, while in the pre-uncertainty period, the pricing influence is not significant. Item-wise analysis of the supplementary disclosure index reveals a significant demand for disclosure about the independent valuer entity involved in the valuation process from both auditors and investors.

In sum, this thesis reports that the fair value adjustments to investment properties are informative. However, the perceived informativeness diminishes if firms are closer to the violation or in technical default of borrowing covenants. A stronger governance system can mitigate faithful representation concerns and the discounting effect on fair value adjustments arising due to higher likelihood of debt covenant violations. The results also show that the fair value expertise of the audit firms and audit partners obtained through engagement tenure increase the perceived reporting quality of fair value adjustments. Nevertheless, unlike the banking sector, in a real estate setting, the role of industry specialist auditors in addressing reliability issues can be limited. Finally, findings suggest an informational benefit of supplementary disclosures on Level 3 fair value estimates during the market uncertainty of 2020, both in terms of lower audit fees and the higher market valuation of fair value adjustments.

1.3 Contribution to the Literature

This thesis adds to the growing body of literature on the value relevance of fair value measurements (Ayres, 2016; Bagna et al., 2015; Goh et al., 2015; Song et al., 2010). Not only are there few studies that investigate the informativeness of the fair value adjustments to non-current assets (Aboody et al., 1999; Gonçalves et al., 2017;

Huffman, 2018), the findings presented in this thesis extend the existing understanding on the impact of closeness to borrowing covenant violation on the perceived managerial bias and the role of auditor fair value expertise and supplementary disclosures in mitigating the faithful representation concerns associated with Level 3 fair value estimates.

The result obtained in regard to the first research question, that fair value adjustments are positively associated with stock returns, confirms that the Australian real estate market considers the changes reported in Level 3 fair values as informative, consistent with Bandyopadhyay et al. (2017) and Israeli (2015). However, analysis of the second research question indicates that investors incrementally apply a discount for firms closer to the violation or in technical default of their borrowing covenants. This is in line with the debt covenant hypothesis (Watts & Zimmerman, 1986) and supports the notion that contracting reasons can be a crucial consideration for the pricing of Level 3 fair value estimates (Christensen & Nikolaev, 2013; Israeli, 2015). While extant studies provide evidence of an incremental discount on fair value in the presence of lower capital adequacy ratio (Robinson et al., 2018), liquidity concerns (Bagna et al., 2015), and earnings management concerns (Chong et al., 2012), this study extends the investigation to closeness to borrowing covenant violation as an added explanation of market discount on Level 3 fair values.

The research conducted in regard to the third research question examines the role of auditor tenure and industry specialisation with the lens of learning experience and fair value expertise in mitigating faithful representation concerns, in contrast to prior studies that predominantly concentrate on the role of board characteristics (Huang et al., 2016; Siekkinen, 2017; Song et al., 2010) and Big 4 auditors (Kanagaretnam et al., 2009; Lee & Park, 2013). The finding that the information quality of fair value adjustments increases during the mid-years of tenure and is not

affected significantly beyond 10 years of firm tenure provides an indication that the non-linear effect of firm tenure on reporting quality (Boone et al., 2008; Ghosh & Moon, 2005; Hohenfels, 2016) may persist for fair value estimates. However, the findings that the benefits of audit firm tenure continue to accrue in longer tenures for upward adjustments suggest that longer tenure can be beneficial (Geiger & Raghunandan, 2002; Myers et al., 2003; Stanley & DeZoort, 2007) in cases where concerns about managerial bias are high. The findings that investors account for the time it takes for a new partner to develop client-specific knowledge emphasise the importance of "expertise" at the partner level. Contrary to expectation (Bratten et al., 2020; Kanagaretnam et al., 2009), results show the limited influence of industry specialist auditors in a real estate setting. Therefore, the findings obtained in response to the third research question add to the literature on the role of audit firm tenure, partner tenure (Boone et al., 2008; Ghosh & Moon, 2005; Hohenfels, 2016) and industry specialist auditors (Balsam et al., 2003; Bratten et al., 2020).

Prior research examines the exposure to fair values as a determinant of audit fees (Ettredge et al., 2014; Hong & Hwang, 2018; Yao et al., 2015). The research carried out in response to the fourth research question contributes to this literature by examining the role of supplemental fair value disclosures as a determinant of audit fees. The finding of a negative association between audit fees and supplementary disclosures indicates that providing additional disclosures on Level 3 fair values can reduce the audit risk perceived by auditors. Furthermore, the results obtained in regard to the fifth research question contribute to the ongoing debate on the usefulness of additional disclosures on Level 3 fair value estimates (Chung et al., 2017; Vergauwe & Gaeremynck, 2018; Weiss & Shon, 2017). Contrary to Vergauwe and Gaeremynck's (2018) study, which concludes investors did not incorporate the extended measurement-related disclosures on fair values into their decision during

the 2008 GFC, I provide evidence that supplemental disclosures increase the informativeness of fair value information during the market uncertainty of 2020. Moreover, item-wise analysis of the supplemental disclosure index reveals a demand for disclosure about the independent valuers involved in the valuation process from both auditors and investors. Perhaps, disclosure about the external entity is interpreted as an additional layer in the monitoring and creates a higher sense of credibility on Level 3 estimates. Interestingly, prior studies on the relevance of supplemental fair value disclosures did not consider this to be a potentially critical item.

For investment properties, the issue of the relevance and faithful representation of fair value is an ongoing debate. While the IASB mandates disclosure of the fair value of investment properties, US Generally Accepted Accounting Principles (GAAP) recommend the use of the cost model and restrict any upward adjustments fearing that mandating fair value would make financial statements subject to a high degree of managerial discretion and limit their relevance for decision-making. This thesis provides evidence that not only are changes in fair value of investment properties value relevant, but the market also recognises the differences in reliability, when the potential for bias in managerial discretion is high due to the closeness to borrowing covenant violation, or when the auditors involved are experienced and hold superior client-specific knowledge. The evidence that supplementary disclosures can increase the perceived informativeness of fair value adjustments in volatile times indicates a demand for expanded fair value disclosures to mitigate the faithful representation concerns. The findings documented in this thesis support the move toward fair value reporting for non-current assets, which yet remains an open question for the Financial Accounting Standards Board (FASB).

1.4 Thesis Structure

The remainder of this thesis is organised as follows. Chapter Two presents the institutional background on accounting for investment properties under IAS 40 and disclosure on fair values under IFRS 13. It reviews the fair value accounting literature covering both financial and non-financial assets and develops the theoretical framework of the thesis.

Chapters Three to Five present three empirical studies. Chapter Three examines the influence of the closeness to borrowing covenant violation on investors' pricing of fair value adjustments. Chapter Four investigates the impact of auditors' fair value expertise on the perceived reporting quality of fair value adjustments. Chapter Five reports the extent to which market uncertainty during 2020 increased supplementary disclosures on Level 3 fair values and whether the effect of disclosures on audit fees and market valuation of fair value adjustments varied between pre-uncertainty and uncertainty periods. Each empirical study develops hypotheses theorising the relations between the variables of interest, details empirical models, defines the sample selection process and presents descriptive statistics, followed by regression results and additional analyses.

Chapter Six concludes. The chapter summarises the findings from the previous chapters and discusses the potential implications of the three empirical studies. Study limitations are identified, and directions for future research are provided.

Table 1.1: Thesis structure

Chapter Two: Institutional Background, Literature Review & Research Framework

Chapter Three: Covenant Violation Concerns and Investors' Pricing of Fair Value Adjustments

Hypotheses	Research Design	Key Findings
$H_{3.1}$: The fair value adjustments to the investment properties are positively associated with stock returns.	Sample: All ASX real estate firms Period: 2007 to 2019 Model: Return model Dep var: Stock return Indep var: Fair value adjustments, firms at high risk of violation & firms currently in violation of borrowing covenants	Fair value adjustments are significantly positively associated with stock returns, indicating that investors place positive valuation weights on fair value adjustments.
$H_{3.2}$: The closeness to borrowing covenant violations does not moderate the value relevance of fair value adjustments.		Investors apply a discount on fair value adjustments when real estate firms are closer to a violation or have violated borrowing covenants.
$H_{3.3}$: The longer maturity period and secured nature of borrowing contracts do not moderate the value relevance of fair value adjustments.		The discount effect on fair value adjustments varies across different borrowing categories. Investors' price fair value adjustments lower among firms with higher secured and higher long-term borrowing. However, pricing is higher for firms with higher long-term unsecured borrowing.

Chapter Four: Does Auditor Fair Value Expertise Affect the Perceived Reporting Quality of Fair Value Adjustments?

Hypotheses	Research Design	Key Findings
$H_{4.1a}$: The difference in the length of the audit firm-client relationship does not moderate the stock market valuation of fair value adjustments to investment properties.	Sample: All ASX real estate firms Period: 2007 to 2019 Model: Return model Dep var: Stock return	Investors perceive the reporting quality of fair value adjustments is higher for the medium-tenure audit firm than the short-tenure audit firm. For longer tenure audit firms, the moderating influence is not significant.
$H_{4.1b}$: The difference in the length of the audit partner-client relationship does not moderate the stock market valuation of fair value adjustments to investment properties.		Investors' valuation of fair value adjustments is significantly higher after the first two years of partner appointment.

$H_{4.2}$: Industry specialist auditors do not moderate the positive association between fair value adjustments to investment properties and stock returns.	Indep var: Fair value adjustments, auditor tenure, industry specialist auditor	There is no incremental valuation effect of engaging industry leaders at the firm or at the partner level.

Chapter Five: Relevance of Supplementary Fair Value Disclosures under Market Uncertainty: Effects on Audit Fees and Investors' Pricing

Hypotheses	**Research Design**	**Key Findings**
$H_{5.1}$: Firms are likely to provide more supplementary disclosures for Level 3 investment properties during the market uncertainty period relative to the pre-uncertainty period.	Sample: All ASX real estate firms Period: 2018 to 2020 Disclosure index	Supplementary disclosures on the Level 3 investment properties increased significantly during the uncertainty of 2020 relative to 2019 and 2018.
$H_{5.2a}$: Supplementary Level 3 fair value disclosures for investment properties are negatively associated with audit fees. $H_{5.2b}$: The negative association between supplementary fair value disclosures and audit fees is more pronounced during the market uncertainty period.	Model: Audit fee model Dep var: Audit fee Indep var: Supplementary disclosures on Level 3 fair values	Audit fees are negatively associated with the level of supplementary disclosures, indicating a lower perceived audit risk and stronger signalling effect. The uncertainty of 2020 had no incremental influence on the audit fee and supplemental fair value disclosure association.
$H_{5.3}$: Supplementary Level 3 fair value disclosures are positively associated with the investor pricing of fair value adjustments to investment properties during the market uncertainty period.	Model: Price model Dep var: Share price Indep var: Supplementary disclosures on Level 3 fair values	Investors' pricing of fair value adjustments increases with the increase in supplementary disclosures during 2020, while during pre-uncertainty, the pricing influence of disclosure is not significant

Chapter Six: Conclusion

CHAPTER TWO:

INSTITUTIONAL BACKGROUND, LITERATURE REVIEW & RESEARCH FRAMEWORK

2.1 Introduction

This chapter provides an overview of the institutional background to the research investigations, focusing on IAS 40 *Investment Property* and IFRS 13 *Fair Value Measurement*. It further draws on the fair value accounting literature to permit the development of the research framework for this thesis later in the second section. The literature review briefly summarises the long-running controversy on the use of fair value over historical cost (Section 2.3.1), discusses the development of value relevance studies on fair value accounting in response to the initiatives by standard setters (Section 2.3.2), identifies the factors driving the faithful representational concerns on Level 3 fair value estimates (Section 2.3.3) and discusses the potential role of monitoring systems (Section 2.3.4) and additional disclosures (Section 2.3.5) in restoring the credibility of fair value reporting. Building on these discussions, Section 2.4 sets out the research framework of the thesis. Specific hypotheses for the questions investigated in this thesis are presented in their respective chapters.

2.2 Institutional Background

This section reviews the standards regulating the reporting of the fair value of investment properties, highlighting the permitted discretionary choices and disclosure framework. Specifically, it discusses the IFRSs on the measurement and disclosure of investment properties, i.e., IAS 40 (adopted as Australian Accounting Standards Board (AASB) 140) and fair values, i.e., IFRS 13 (adopted as AASB 113).

This focus is chosen because of the nature of research setting and to portray the current financial reporting landscape in the Australian context.

2.2.1 Reporting of fair value of investment properties under IAS 40

Effective since 2005, IAS 40 (adopted as AASB 140 in Australia) requires investment properties to be measured initially at cost (IAS 40.20) and subsequently at fair value, known as the recognition regime (IAS 40.30). Under the recognition regime, fair values of investment properties are reported on the balance sheet, and changes in values are incorporated in earnings (IAS 40.35). That means gains and losses flow through net income not only when they are realised but also every time managers' report changes in property value, i.e., unrealised gains/losses. Several commentators suggested recognising fair value adjustments in equity or, alternatively, upward adjustments in equity and downward adjustments to net income (IASB, 2000, para. BC 63-64). Nevertheless, the IASB states that the reporting of fair value adjustments in the income statement provides the most relevant and transparent view of the financial performance of investment property (IASB, 2000, para. BC 65). Such reporting of unrealised gains and losses in earnings is permitted for only a few items by the IFRS. In most cases, fair value changes are incorporated in other comprehensive income (OCI).

IAS 40 allows substantial discretion in the investment property valuation process. First, an entity can choose either the fair value model or the cost model to report the valuation (IAS 40:30). But the cost model can be chosen if fair value is not measurable reliably (IAS 40: 53), with the provision of disclosing fair values in the notes to the financial statements (IAS 40: 79.e). As observed, above 90 percent of real estate firms in Australia adopted the fair value model to recognise investment properties during the sample period. Second, changes in fair values can be reported

in either direction, upward or downward. For 69 percent (27 percent) of firm-year observations, i.e., 307 (121) out of 444 firm-year observations, the sample real estate firms reported unrealised gains (unrealised losses), and 4 percent of the firm-years do not show any adjustments. Third, despite concerns regarding biased estimation, there is no concrete rule regarding who estimates the valuation. Typically, valuation by an independent valuer with relevant professional qualifications is encouraged (IAS 40:33), but firms can appoint managers to carry out the revaluation. The majority of sample real estate firms use a combination of directors and independent valuers, where independent valuers appraise the value periodically, with the period not exceeding three years. Moreover, in terms of the frequency of adjustments, firms can adjust the valuation as and when they deem necessary, which raises questions regarding the timeliness and relevance of measurements. As noted, the sample firms reported fair value changes on investment properties almost every year.

Unlike IFRS, the US GAAP does not permit the use of fair values for investment properties. US GAAP recommends using the cost model and restricts any upward adjustments, fearing that mandating fair value would make the financial statements subject to a high degree of managerial discretion and limit their relevance for decision-making. Therefore, the discretionary choices permitted by IAS 40 for the fair value reporting of investment properties, and the unique features of the Australian real estate sector, allow research opportunities which are not available in the US GAAP and many other settings.

2.2.2 Fair value hierarchy and disclosures under IFRS 13

Fair value accounting has been a part of financial reporting practices since the 1990s (Barth, 1994; Barth et al., 1996; Landsman, 2007; Robinson et al., 2018). However, the guidance for its application was instrument-specific (e.g., IFRS 7 *Financial*

Instruments: Disclosures) (Lawrence et al., 2015). Demand for more relevant and timely financial information from market participants motivated the FASB and the IASB to develop a unified framework on fair value measurements.

The IASB issued IFRS 13 *Fair value measurement* in 2011 (effective since 2013), with three primary objectives: (i) to define fair value; (ii) to establish a framework for measuring fair value, i.e., the three-tier hierarchy; and (iii) to set out the disclosure requirements (IASB, 2011, para. 1).

First, putting an end to the controversy regarding the use of entry price, exit price or replacement cost, IFRS 13 provides a single coherent definition of the 'fair value'. As per IFRS 13, fair value is "the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date" (IASB, 2011, para. 9).

Second, IFRS 13 provides implementation guidance for fair value measurements through a hierarchical framework (IASB, 2011, para. 76-90): Level 1 inputs are quoted prices in active markets for identical assets; Level 2 inputs are observable inputs other than quoted prices included within Level 1; and Level 3 are unobservable inputs developed internally based on managers' assessments of the best information available. The complexity and subjectivity inherent in fair value estimates increase monotonically from Level 1 to Level 3. Hence, the standard requires preparers to prioritise Level 1 inputs, as they are verifiable, and give the lowest priority to Level 3 inputs (IASB, 2011, para. 72).

Third, IFRS 13 enhances the disclosure requirements for Level 3 measurements and mandates firms to disclose information such as: (i) quantitative information about the significant unobservable inputs; (ii) a description of valuation techniques, any changes to those and reasons for the changes; (iii) a description of unobservable inputs; (iv) a reconciliation from the opening balances to the closing

balances; (v) a description of the valuation processes; (vi) narrative sensitivity analysis of unobservable inputs; and (vii) transfers between Levels within the hierarchy (IASB, 2011, para. 93). Extended disclosure aims to enhance the faithful representation and transparency of Level 3 fair values for users.

Given there were controversial views regarding the disclosure requirements, the IASB initiated a post-implementation review (PIR) of IFRS 13 in 2017. On the one hand, PIR respondents of IFRS 13 indicate that disclosures on fair value measurements under IFRS 13 are useful (IASB Staff, 2018). The majority agreed that the most useful disclosures include categorisation by hierarchy, the Level 3 valuation process description, techniques and inputs, and quantitative information on significant unobservable inputs (IASB Staff, 2018, para. 14). The three-tier hierarchy is useful to gauge the extent of risks and the inherent subjectivity of the estimates (IASB Staff, 2018, para. 17); discussion on Level 3 valuation techniques and inputs gives an understanding of how the measurement is derived or assumptions are used, the reasonableness of techniques and assumptions, and potential impact on the valuation during periods of stress (IASB Staff, 2018, para. 20); and quantitative disclosure on unobservable inputs clarifies managerial judgements used in the valuation (IASB Staff, 2018, para. 23). However, many argue that several disclosure requirements are unnecessary, generic, and aggregated (IASB Staff, 2018, para. 36). For example, quantitative disclosures on significant unobservable inputs and sensitivity analysis provide only limited information due to their aggregated nature, making disclosure non-comparable between entities for non-homogeneous assets (IASB Staff, 2018, para. 32 and 49). Respondents state that the discussion on Level 3 valuation techniques, processes, and inputs is too generic (IASB Staff, 2018, para. 21 and 36) and does not describe how it relates to asset valuation. Further, disclosure

on Level 3 fair value reconciliation is provided solely for compliance purposes and is of minimal use to the management or external users (IASB Staff, 2018, para. 41).

The IASB completed its PIR of IFRS 13 in December 2018 and issued the Board's feedback statement. Acknowledging that there is still room for improvement, the Board announced adding a project to perform a targeted standards-level review of disclosure requirements (IASB Staff, 2018). The Board concluded that although the information required by IFRS 13 is useful to users of financial statements, implementation challenges exist that may result in inconsistent application by and unexpected costs for mandating firms (IASB Staff, 2018).

2.3 Literature Review

The literature review begins with a brief discussion of the controversy on the use of fair value accounting over historical cost accounting in Section 2.3.1. It proceeds with an overview of the studies investigating the market valuation of fair value information in Section 2.3.2, focusing on both financial and non-financial assets. Section 2.3.3 identifies the possible reasons behind the perceived lower reporting quality of Level 3 fair value estimates. Section 2.3.4 and Section 2.3.5 highlight the role of monitoring systems such as governance (including auditors) and additional disclosures in restoring the credibility of fair value reporting. Each section reviews related studies carried out in the context of investment properties and identifies potential research areas yet to be addressed, leading to the research questions posed by this thesis.

2.3.1 The fair value controversy

The increasing convergence of accounting practices towards fair-value-based reporting by the IASB and the FASB has increased the use of fair value accounting.

Starting from the valuation of financial assets and progressing to impairment calculation or measurement of investment properties and biological assets, the standard setters have increasingly considered fair value to be a potential measurement basis in a majority of standards (Barth, 2006).[6] Both the FASB and the IASB emphasise the capacity of fair values to incorporate, in an efficient and objective manner, market participants' expectations about future cash flows (Hitz, 2007; Hodder et al., 2014). This involves considering the changes in the amount, timing or risk of expected future cash flows, the price of risks, interest rates, and liquidity premiums. The gradual shift in the measurement paradigm raised controversy among regulators, standard setters, researchers, practitioners, and other capital market stakeholders (Christensen & Nikolaev, 2013; Laux & Leuz, 2010).

One group of researchers argues that fair value information provides improved timeliness and transparency of reported financials (Ryan, 2008), has greater relevance, and enables better decision-making (Barth, 2006; Barth et al., 2001). Studies show that if managers utilise the permitted discretion to reflect their private information, fair value adjusted earnings are better able to predict future earnings (Bandyopadhyay et al., 2017; Bratten et al., 2016; Evans et al., 2014). Studies also document that the volatility of incremental fair value adjusted income captures risk elements that the capital markets price, i.e., fair value income is risk-relevant (Hodder et al., 2006). Additionally, extensive literature provides evidence of the incremental power of fair value relative to historical cost in explaining equity values (Barth, 1994; Barth et al., 1996; Venkatachalam, 1996).

Another group of researchers contends that fair values are prone to manipulation by management, subject to higher estimation error, and less verifiable

[6] For example, up to 2016, the IASB had enacted 18 reporting standards that contained fair value measurements.

by investors. The use of fair value increases reliability concerns and creates 'noise' around decision-making (Barth & Landsman, 2010; Landsman, 2007; Laux & Leuz, 2010; Penman, 2007). For example, Barth et al. (1995) document that banks report more volatile earnings under fair value accounting relative to historical cost and show a higher likelihood of violating regulatory capital requirements. Barth (1994) finds that fair value gains and losses on securities include more measurement error than historical costs. As per Valencia et al. (2013), fair values can lower banks' capital ratios and make them appear less capitalised than they fundamentally are. Khurana and Kim (2003) show that fair values are value relevant only when objective market-driven inputs are available. Studies such as Eccher et al. (1996) and Petroni and Wahlen (1995) indicate that capital market participants deem valuations to have a lower reliability for illiquid financial instruments when they are measured at fair value.

Thus, while there has been a movement to increase the use of fair value reporting in the preceding decades, any proposed changes to increase fair value reporting have met with opposition based on concerns about faithful representation. Standard setters strived to balance the trade-off between relevance and faithful representation, as well as the preferences of all stakeholders affected by each proposed regulatory change. In the next section, I discuss the evolution of the value relevance studies on fair value accounting, in response to regulatory initiatives, for both financial and non-financial assets.

2.3.2 Market pricing of fair value estimates

Financial assets

Studies focusing on investors' valuation of fair value estimates have developed momentum since 1992 after the issue of SFAS[7] 107 *Disclosures about Fair Value of Financial Instruments* by the FASB, requiring the disclosure of financial instruments at fair values. A majority of the fair value accounting studies focus on the banking and insurance industry, (e.g., Barth et al., 1996; Nelson, 1996) because financial institutions report financial assets and liabilities of a significant size at fair values. Previous studies examining the decision usefulness of fair value information provide inconclusive evidence.

Three contemporaneous studies, Barth et al. (1996), Nelson (1996) and Eccher et al. (1996), investigate the incremental value relevance of the fair value of financial instruments for US banks under SFAS No. 107 around a similar sample period 1992-1993, with different sets of control variables. Nelson (1996) finds that fair value measurements for investment securities, loans, deposits, long-term debt and off-balance sheet financial instruments have no incremental valuation implications relative to book values. By contrast, Barth et al. (1996) document a greater explanatory power for fair value loans and long-term debts but a weaker association for deposits and off-balance sheet items. Eccher et al. (1996) show mixed results, reporting that the fair value of investment securities and off-balance-sheet instruments are value-relevant in limited settings, and the association of fair value and return is weaker with net loans and not significant for deposits.

Since the adoption of SFAS No.107, the FASB has made several changes to the standards regulating financial and derivative instruments, such as the issue of

[7] Effective since 2009, the SFAS have been superseded by the FASB Accounting Standards Codification (ASC). However, when discussing prior research, I referred to 'SFAS' because those studies used this term.

SFAS 115 *Accounting for Certain Investments in Debt and Equity Securities* in May 1993, SFAS 119 *Disclosure about Derivative Financial Instruments and Fair Value of Financial Instruments* in October 1994 and SFAS 133 *Accounting for Derivative Instruments and Hedging Activities* in June 1998. These regulatory initiatives motivated researchers to examine the usefulness of each of the changes by testing the differential explanatory power of fair value estimates, (e.g., Ahmed et al., 2006; Khurana & Kim, 2003; Venkatachalam, 1996). For example, Venkatachalam (1996) uses evidence on SFAS 119 from US banks and finds that fair value for derivatives has incremental explanatory power over the notional amounts. Contrary to this, Khurana and Kim (2003) fail to document any significant difference in the informativeness of fair values relative to historical costs in explaining share prices. However, each of these standards was instrument specific. None of them established any unified framework for fair value reporting, which led to differential fair value reporting practices for each separate asset class.

The FASB responded to the demand for a coherent reporting framework to report fair value measurements by issuing ASC 820 *Fair Value Measurement* (previously known as FAS 157 *Fair Value Measurement*) in September 2006. The measurement and disclosure based on the three-tier hierarchy received much attention from academics. The focus of the fair value accounting research shifted towards the value relevance of the ASC 820 hierarchy for financial instruments.

Using a large sample of US banks, Song et al. (2010) examine the value relevance of the FAS 157 three-level hierarchy over the first three quarters of 2008. The authors find that, while the fair values of financial assets are value relevant at all Levels, Level 3 fair values are priced much less than the Level 1 and Level 2 fair values. Authors interpret this evidence as investors putting lower weight on Level 3 assets and liabilities due to the underlying estimation uncertainty and potential for

managerial bias. Kolev (2019) reports similar findings from examining the FAS 157 disclosures for US financial firms for the first two quarters of 2008. The author documents that the valuation multiples on Level 3 fair values are lower than Level 1 fair values.

By contrast, Goh et al. (2015) show that the discount on Level 3 estimates documented by Song et al. (2010) is no longer significant when the market conditions stabilise. Lawrence et al. (2015), using a sample of closed-end funds, find minor differences in value relevance across the hierarchy, i.e., Level 1, Level 2, and Level 3 fair values are priced on the dollar at 95 cents, 91 cents, and 97 cents, respectively. In contrast, Song et al. (2010) documented Level 3 fair values pricing at 68 cents on the dollar. Lawrence et al. (2015) also show less timeliness of Level 3 fair values compared to Level 1 and Level 2 fair values, although the differences are relatively small. Moreover, these authors report that, across all three levels, the ability of closed-end fund premia to predict future stock returns is reasonably similar. In a similar vein, Altamuro and Zhang (2013) examine the mortgage servicing rights and document that Level 3 inputs are as value relevant as Level 2 inputs.

Only a few studies use non-US contexts to examine the value relevance of the fair value hierarchy. For European banks, Bagna et al. (2015) find that Level 3 financial instruments reported under IFRS 7 *Financial Instruments: Disclosures* are priced at a discount by investors. The documented discount is 10 percent lower than that outlined in the US-based studies, probably because of the differences in enforcement level and the dynamics of the adoption period between European and US samples. In a similar setting, Bosch (2012) reports that investors perceive significantly lower reliability for Level 3 fair values than Level 1 fair values. Liao et al. (2021) document that the fair values of assets and liabilities of European financial institutions are relatively more value relevant than historical costs during the GFC

but not before. However, both measures are incrementally value relevant to each other before and during the financial crisis.

Thus, it is evident that the measurement uncertainty increases incrementally across the fair value hierarchy, with Level 3 inputs being the most uncertain and prone to managerial bias. Yet, it is difficult to draw a generalisable conclusion about their relative value relevance since it may vary among the different classes of financial assets. The next section reviews the fair value accounting studies concerning non-financial assets.

Non-financial assets

The extant studies on the value relevance of fair value estimates for non-financial assets predominantly focus on Australia and UK samples because these countries historically have allowed both upward and downward revaluation of non-financial assets, whereas US GAAP permits downward revaluations only (Aboody et al., 1999). After the adoption of IFRS, researchers anticipated a significant shift towards the use of fair values for non-financial assets. However, Christensen and Nikolaev (2013) find no evidence consistent with this expectation. These authors report that managers of UK and German firms prefer the cost model for a broad range of non-financial assets, including plant and equipment and intangible assets. Fair value is used for property valuation only. Moreover, companies are equally likely to use cost and fair values as measurement bases for investment properties. Hence, the authors conclude that fair value is less likely to be the primary valuation basis for illiquid non-financial assets.

Early studies testing the association between fixed asset revaluations and stock market prices and returns find that revalued amounts are value relevant. For a sample of Australian firms, Easton and Eddey (1997) test the association between market returns and net increments/decrements to the asset revaluation reserve in

both inflationary (1981–1990) and recessionary (1991–1993) periods and document that asset revaluations are value relevant over the entire economic cycle. Barth and Clinch (1998) examine the relevance, reliability, and timeliness of revalued assets for Australian firms, and find that revalued financial, tangible, and intangible assets are value relevant. Barth and Clinch (1998) report a few associations that most of the later studies have failed to prove. For example, these authors document a stronger value relevance for plant and equipment than for property, though later studies observe an opposite scenario (e.g., Christensen & Nikolaev, 2013). Further, Barth and Clinch (1998) find a consistent and significant value relevance for intangible assets, contradicting the view that such estimates are unreliable. Most of the recent studies have failed to prove this relationship due to the stricter requirement of IFRS to revalue intangibles in the absence of an active market and the fact that an active market for intangibles is rarely found (Cairns et al., 2011). In a similar vein, Aboody et al. (1999) take the context of UK firms and conduct market-based tests to examine the association between asset revaluation balance and share prices, and the association between current-year upward revaluations and returns. The authors find a significant positive association in both tests, suggesting that fixed asset revaluations reflect at least a part of asset value changes on a timely basis.

After the implementation of IFRS in 2007, most of the fair value studies concentrated on the impact of individual IFRSs (e.g., IAS 16 *Property, Plant and Equipment*, IAS 40 *Investment Property,* and IAS 41 *Agriculture*) relating to specific non-financial assets. For example, Gonçalves et al. (2017) study the market valuation implication of biological assets under IAS 41 and find that biological assets are value relevant at fair values, and this association is even stronger for firms with higher disclosure levels. Huffman (2018) examines the influence of asset use on the relevance of fair value measurements and reports that investors significantly discount

the fair value of in-use biological assets and their associated unrealised gains and losses relative to in-exchange biological assets. Contrary to Gonçalves et al.'s (2017) findings, He et al. (2018) document that the fair value of biological assets reported as per IAS 41 does not provide incremental forecasting power for future operating cash flows. This is in line with the view that fair value accounting only suits assets traded in highly liquid markets (Barth et al., 1995; Hitz, 2007; Hodder et al., 2006). A recent study by He et al. (2020) finds that managers of agricultural firms in Australia report larger fair value gains when the earnings target is not met. This is consistent with the opportunistic use of discretion permitted under IAS 41.

Investment properties

For investment properties, most of the prior studies examine the drivers of measurement choice, i.e., the fair value model versus the historical cost model and their relative value relevance (Israeli, 2015; Müller et al., 2015). One possible reason may be that IAS 40 permits the use of the cost model if the fair value of the investment property cannot be reliably measured. This provision of choice encourages researchers to focus more on the incremental value relevance of fair value relative to historical cost and what drives managers' choice of the measurement basis, leaving the implication of the hierarchy underexplored.

Regarding the drivers of measurement choice (Table 2.1, Panel A), extant studies identify two factors that predominantly impact the choice of fair value for investment properties: contractual incentives and asset pricing incentives (Christensen & Nikolaev, 2013; Israeli, 2015). Investigating contractual incentives, Israeli (2015) documents that firms with higher leverage and more dispersed ownership have a higher probability of adopting the fair value model. Christensen and Nikolaev (2013) find a positive association between a reliance on debt financing and the use of fair values. However, Quagli and Avallone (2010) fail to support the

debt contracting hypothesis. Mäki et al. (2016) document that companies with more concentrated ownership are less likely to apply the fair value model. Regarding asset-pricing incentives, Israeli (2015) finds that firms with less smooth operating income relative to cash flows from operations prior to the transition to IFRS and with larger potential for gains on investment properties have a higher probability of using the fair value model. Quagli and Avallone (2010) show that larger-size firms and firms with lower market-to-book ratio are more likely to use fair values. Taplin et al. (2014) find that Chinese firms with an international influence and firms with above average volatility in earnings are more likely to use fair values.

Studies that examine whether fair value or cost amounts of investment properties are valued differently by investors (Table 2.1, Panel B) find that even though both measurements are equally relevant for future financial outcomes, equity investors place smaller valuation weights on cost than on fair value amounts. For a sample of Canadian real estate firms, Bandyopadhyay et al. (2017) report fair value adjustments are more predictive of future cash flows and more highly correlated with the concurrent stock price. Israeli (2015), using a European sample, shows that fair value amounts are significantly positively associated with changes in net rental income one and two years ahead, as well as cash flow from operations. Israeli (2015) further documents a positive association between fair value amounts and share price, stock return, and a higher market valuation of the fair value model than the cost model. Measuring the reliability of fair value estimates in terms of bias and accuracy of appraisers' estimates, Dietrich et al. (2000) find that, for UK real estate firms, fair values are less biased and more accurate measures of selling price relative to the historical cost amounts. Danbolt and Rees (2008) show that fair value income is more value relevant than historical cost income. Similar findings are reported by Müller et al. (2015), Nellessen and Zuelch (2011) for European real estate firms, and by So and

Smith (2009) for Hong Kong real estate firms. Even though the positive fair value-return association is well established, extant studies primarily focus on the UK and European contexts. To confirm that the prior findings hold for Australian setting, the first research question set out in this thesis examines whether investors in Australian real estate firms incorporate the changes in the Level 3 fair value estimates into their pricing decisions (*RQ1*).

In summary, fair value measurements are value relevant for both financial and non-financial assets. Level 3 fair values are valued at a discount, and the magnitude of the discount varies across different asset classes and in the presence of incentives for managerial bias due to the varying degree of faithful representational concerns about underlying information. The next section reviews prior studies investigating the factors influencing investors' perceptions of the faithful representation of reported fair values estimates.

2.3.3 Why does the market discount Level 3 fair value estimates?

Many of the fair value studies indicate that managers use Level 3 fair values as a tool to achieve self-serving motives. For a sample of US banks, Barth et al. (2017) find the use of realised available-for-sale securities gains and losses to smooth earnings and increase low regulatory capital. Robinson et al. (2018) show that banks near key capital ratios report higher unrealised gains on Level 3 assets. In a similar setting, Chong et al. (2012) find that large banks and poor performing banks with lower returns on assets, lower cash flows, and higher amounts of provision for loan losses are more likely to value assets and liabilities using Level 3 inputs. In a similar vein, Dechow et al. (2010) show that financial institutions use fair value gains or losses from asset securitisation to smooth earnings. Fiechter and Meyer (2011) document that poor-performing banks are more likely to have managed down the unrealised

losses from Level 3 measurements in the period before positive earnings. Furthermore, Livne et al. (2011) find that fair values of trading assets and available-for-sale securities are positively related to cash bonuses and that compensation committees make selective use of fair value adjustment outcomes in determining compensation. Yao et al. (2018) provide evidence that there is greater use of Level 3 valuation by banks with lower profitability, smaller size, lower Tier 1 capital adequacy ratio and the employment of Big 4 audit firms.

Regarding the managers' motives behind fixed asset revaluation, earlier papers such as Brown et al. (1992) and Whittred and Chan (1992) provide evidence on Australian firms. Whittred and Chan (1992) show that revaluation is positively related to growth opportunities, financial leverage and the presence of borrowing limitations; and negatively related to a firm's ability to finance growth internally. Further, Brown et al. (1992) find that revaluing firms are highly levered, closer to violating their debt covenant constraints, larger, had relatively higher property holdings and lower tax-free reserves. For biological assets, He et al. (2020) find that managers of Australian firms report a larger agricultural fair value gain when the earnings target is not met.

Using the context of investment properties, a stream of studies examines whether the discretion permitted by the fair value regime is utilised to exercise bias or to provide private information (Table 2.1, Panel D). On the one hand, Bandyopadhyay et al. (2017) and Sikalidis and Leventis (2017) provide evidence that fair value adjustments are informative and persistent, i.e., they reliably predict future income. On the other hand, studies also document the opportunistic use of managerial discretion under the fair value regime. For example, Chen et al. (2020) show that fair value adopters in China use the unrealised gains and losses to smooth earnings and meet or beat earnings benchmarks. For property companies in Hong

Kong, Chen and Tang (2017) find that fair value adjustments have been a determinant of executive compensation since the IFRS adoption in 2005. These authors provide evidence on the sensitivity of CEO compensation to fair value gains but not to losses, indicating that compensation committees guard against the decline in the fair value of investment properties.

A relevant question that arises at this point is: do investors recognise such opportunistic bias and penalise the fair value estimates while pricing? Bagna et al. (2015) examine three potential reasons for the differences between the balance sheet and market value of assets: (i) earnings management, (ii) lack of liquidity, and (iii) disclosure opacity. These authors document that the first two reasons co-exist, and find that the market applies a liquidity discount when banks transfer small net assets from Level 1 and 2 to Level 3. When transfers are bigger, the market applies a higher discount, suspecting that managers avoid current and future losses through a large transfer. Robinson et al. (2018) and Goh et al. (2015) provide evidence that investors apply an incremental discount on Level 3 assets for firms closer to their capital adequacy target. Riedl and Serafeim (2011) show that banks with greater exposure to the Level 3 assets exhibit higher betas and that the information risk is more pronounced for banks with ex-ante lower quality information environments. As per Kolev (2019), the discount on Level 3 fair value estimates is greater for banks with lower equity capital and fewer financial experts on the audit committee, and for companies that develop Level 3 estimates internally.

The high risk of violating borrowing covenants is yet another reason that might cause a capital market discount (Aboody et al., 1999) but it remains underexplored in the fair value accounting literature. The violation of a borrowing covenant is costly (Beneish & Press, 1993), and managers are likely to use accounting discretion to avoid such a violation (Watts & Zimmerman, 1986). Studies show that

the association between asset revaluation amounts and future performance, prices, and returns is weaker for highly levered firms (Aboody et al., 1999; Easton et al., 1993). However, studies have also evidenced no influence of high leverage on managers' decisions (DeAngelo et al., 1994; Healy & Palepu, 1990). Due to the limited access to machine-readable data on debt contracts and borrowing covenants, extant studies remain silent regarding the impact of closeness to borrowing covenant violation on the value relevance of fair value amounts. The highly geared nature of the real estate sector and extensive reliance on Level 3 fair values for measuring investment properties provide an interesting setting to address this issue. Thereby, the second research question posed in this thesis links the Level 3 fair value controversy with debt contracting theory and asks whether investors perceive potential for opportunistic bias in Level 3 fair value adjustments when firms are closer to violating or are in violation of borrowing covenants (*RQ2*).

Overall, research suggests that although Level 3 fair values are generally value relevant, investors raise questions when they perceive any managerial bias or suspect that the fair value information lacks faithful representation. The next section discusses to what extent a strong monitoring mechanism mitigates faithful representational concerns about the Level 3 fair values.

2.3.4 Role of monitoring

Prior studies suggest that effective monitoring mechanisms, internal (e.g., corporate governance) or external (e.g., auditor, regulatory enforcement), can remedy the faithful representational concerns about Level 3 fair values. The role of monitoring is critical because it refines the exercise of accounting discretion (Bowen et al., 2008; Kabir & Rahman, 2016) and limits opportunism (Nazir & Afza, 2018). Habib and Azim (2008) show that efficient monitoring constrains opportunistic behaviour by

management, producing more reliable and relevant accounting information for stakeholders. In fact, the role of monitoring does not end with ensuring the accuracy of accounting numbers but extends to high-quality disclosures (Bhat, 2013).

Internal monitoring: Role of corporate governance

Bhat (2013) states that the monitoring role of corporate governance affects the quality of fair value measurements in three ways: (i) minimising the managerial bias; (ii) implementing sound risk-management process; and (iii) ensuring high-quality disclosures. Simply put, stronger governance mitigates information asymmetry and increases the value relevance of Level 3 fair value assets (Song et al., 2010). Siekkinen (2017) reports that board characteristics such as board independence and gender diversity are positively associated with the information quality of Level 3 fair value estimates. Huang et al. (2016) document the effectiveness of board independence, auditor specialists, audit committee financial experts, and strong internal control in weakening the positive association between Level 3 fair value assets and the cost of equity capital. Chen et al. (2020) find that fair value gain and loss is a determinant of executive compensation for Hong Kong companies with a weak governance structure. Song et al. (2010) find that governance characteristics such as board independence, audit committee expertise, a more active audit committee, institutional investors, and larger-sized auditor increase the reliability of Level 3 fair values. Furthermore, Bhat (2013) documents that corporate governance is positively associated with fair value disclosure and that the association between stock returns and fair value gains and loss increases with the level of disclosure and with the level of corporate governance through the medium of disclosure, not by itself. For Chinese companies, Hsu and Wu (2019) find that firms that recognise investment property at fair value experience an increase in crash risk, but this association is weaker if firms have strong corporate governance.

External monitor: Auditor

Regarding the auditor's role, past research provides evidence that Big 4 and industry specialist auditors ensure higher audit quality (Balsam et al., 2003; Becker et al., 1998) and contribute towards higher value relevance of fair value measurements (Kanagaretnam et al., 2009). High-quality auditors (proxied by Big N auditors and industry specialist auditors), as competent monitors, can reduce the measurement uncertainties of fair value estimates at least for two reasons. First, high-quality auditors possess are better able to detect errors and misstatements due to better monitoring ability (Watts & Zimmerman, 1981). Since auditing fair value estimates requires evaluating a wide array of areas, including liquidity analysis, product mix, statistical models, macroeconomic factors and market conditions, and performing complex tasks such as evaluating model inputs, justification of methods, and reasonableness of the conclusions (Bratten et al., 2013), the involvement of auditors with superior competency and experience with the client and industry can reduce the faithful representation concerns. Second, high-quality auditors, for reasons such as preserving their reputation and lowering litigation liability, have a greater incentive to deter opportunistic fair value reporting by managers as they have "more to lose" if they fail to detect clients breach (DeAngelo, 1981).

Previous empirical research shows that Big 4 auditors minimise information risk and contribute towards a higher value relevance of fair values. Kanagaretnam et al. (2009) examine the impact of auditor reputation on the market valuation of bank's discretionary loan loss provision, and Lee and Park (2013) examine whether the pricing of other comprehensive income reflects the differences in audit quality, measured by Big 4 versus non-Big 4 audit firm engagement. Both studies use the banking context and find superior informativeness of discretionary amounts in the presence of higher audit quality.

However, more recent evidence suggests that the involvement of Big 4 audit firms may not necessarily mean high-quality audit services in practice. In an experimental setting, Griffith et al. (2015) reveal confessions by the Big 6 auditors that they often fail to adequately understand the assumptions in the estimation and overlook conflicting evidence that contradicts management assumptions. These authors document an overreliance by auditors on assumptions and test models generated by managers and raise concerns that management can lead auditors 'down the garden path'. This is consistent with the concerns raised by the Public Company Accounting Oversight Board (PCAOB, 2014) and ASIC (2019). ASIC (2019) reports that Big 4 audit firms fail to perform sufficient verification in support of their opinion. Evidence suggests the adverse findings for KPMG, Deloitte, EY and PricewaterhouseCoopers (PwC) are 33 percent, 32 percent, 22 percent and 18 percent, respectively (ASIC, 2019, p. 7).

Ahn et al. (2020) highlight the importance of auditors' task-specific experience by showing that greater fair value expertise enhances auditor performance and ensures audit quality. This is consistent with the argument by Bratten et al. (2013) that the efficient verification of fair values requires training and practice, instruction, experience, and feedback, which can be obtained only through work experience. For non-financial assets, the role of auditor fair value expertise can be more pronounced because of their illiquid tangible nature and the need to comprehend asset use and industry norms to evaluate the quality of disclosures. Being the most controversial asset group adopting the fair value regime (Christensen & Nikolaev, 2013), and given there are relatively few studies addressing auditors' role as monitors, non-current assets have been a context of interest to academics, practitioners and regulators. This motivates the third research question of this thesis, which asks whether investors

consider auditors' fair value expertise relevant while evaluating the reporting quality of Level 3 fair value adjustments (*RQ3*).

2.3.5 Potential effect of supplementary fair value disclosures

Audit fees

Prior studies (Ettredge et al., 2014; Goncharov et al., 2014; Sangchan et al., 2020) argue that greater exposure to Level 3 fair value assets increases monitoring costs due to an increase in audit efforts and exposure to litigation risk (Table 2.1 Panel F). These studies examine the exposure to and the changes in fair values as determinants of audit fees, leaving the level of disclosures on them out of the scenario. The consideration of supplementary disclosures on fair value is important. On the one hand, auditors may charge higher audit fees to compensate for the extra time and human resources they need to spend on auditing the additional information or the possible reputational and litigation losses they predict for potentially misleading disclosures (i.e., the audit risk effect) (Gillan & Panasian, 2014; Seetharaman et al., 2002). Consistent with this view, Chen et al. (2019) show that auditors charge higher audit fees for firms with goodwill-related fair value disclosures due to a greater litigation risk associated with such disclosures. Hong and Hwang (2018) provide evidence that expanded disclosure requirements on the fair value of pension assets add to the auditor workload and audit efforts because of exposure to higher litigation risk and this leads to higher audit fees.

On the other hand, supplemental disclosure may signal the strength of internal controls, management integrity and increased firm transparency, alleviating the auditors' concerns about the opacity of the fair value measurements and the potential for self-serving motives (i.e., the signalling effect) (Yao et al., 2019). Auditors are less concerned about the earnings manipulation using fair value adjustments because an

additional disclosure lends verifiability to the breakdown of the numbers in the financial statements, increasing the cost of opportunism. Chen et al. (2019) show that when information asymmetry or investor scrutiny is higher, auditors perceive goodwill-related fair value disclosures as a signal of truthful reporting. These authors provide evidence that, under an uncertain environment, the signalling effect offsets the audit risk effect.

A recent study by Sangchan et al. (2020) examines the impact of the fair values of investment properties on audit fees using the Australian real estate context. They report that exposure to Level 3 fair values has no association with audit fees and argue that using Level 3 inputs is more of an industry norm, and auditors do not perceive them as possessing marginal risk. One limitation of the study is that it overlooks the impact of fair value disclosures. In other words, the authors test the audit risk effect without controlling for disclosures. Given the high estimation risk on Level 3 properties, enhanced disclosure by real estate firms has the potential to mitigate the audit risk effect (Chen et al., 2019; Yao et al., 2019), resulting in reduced audit fees. These arguments motivate the fourth research question of this thesis, which asks whether supplementary disclosures on Level 3 fair values are associated with audit fees and to what extent market uncertainty during 2020 impacted this association (*RQ4*).

Market valuation of fair value adjustments

Economic theory suggests two critical insights on disclosure. First, an increased level of disclosures lowers the cost of capital as it reduces the potential for information asymmetry between the firm and investors (Diamond & Verrecchia, 1991; Francis et al., 2008; Leuz & Verrecchia, 2000). Second, disclosure reduces the noise in disclosed information (Holthausen & Verrecchia, 1988) and generates a better pricing response (Healy & Palepu, 2001). Firms that disclose less are prone to a 'downward cash flow

adjustment effect' (Song et al., 2010), which means that when market participants cannot distinguish firms with more reliable estimates from the less reliable ones, out of the concern that Level 3 estimates are overstated, they adjust their valuation downward.

The role of disclosures on the fair value of assets has been examined at two levels in the prior literature: (i) mandatory disclosures as per SFAS 157 or IFRS 13; and (ii) voluntary or supplementary measurement-related disclosures. Studies that examine the impact of mandatory disclosure provide evidence that firms with high quality SFAS 157-related disclosures reduce the information gap across the three levels in the fair value hierarchy (Riedl & Serafeim, 2011). Robinson et al. (2018) show that the transparency under the SFAS 157 disclosure regime limits managerial bias and diminishes the pricing discount on Level 3 estimates. Bagna et al. (2015) suggest that discounts on Level 3 measurements for European banks disappear if complete disclosures are made as per IFRS 7. Moreover, Bhat (2013) shows that the association between stock returns and the fair value gains and losses increases with the level of disclosure.

Two contemporaneous studies examine the informational role of voluntary measurement-related disclosures on financial assets using the US banking context. Chung et al. (2017) find that banks and insurance companies voluntarily provide supplementary disclosures for more opaque financial assets to enhance credibility. These authors further report that reliability disclosures improve market pricing and decrease the information risk of Level 3 estimates. By contrast, Weiss and Shon (2017) show that voluntary fair value disclosures do not unambiguously decrease information asymmetries. They find no evidence that positive or negative disclosures reduce information asymmetry, suggesting that market participants view such disclosures as lacking credibility. Furthermore, their evidence suggests that complex

fair value disclosures and disclosures in uncertain and litigious tones increase information asymmetry.

A few studies that focus on the role of disclosures on investment property fair values provide evidence that investors do not use additional disclosures on property valuation (Table 2.1 Panel E). For instance, Sundgren et al. (2018) show that, post-IFRS 13 adoption, real estate firms in Europe disclose more on property valuations, but additional disclosure has no positive influence on analyst coverage and market liquidity. For European real estate firms, Vergauwe and Gaeremynck (2018) find no impact of supplementary disclosures on the proportion of zero return days and the price, indicating that disclosures lack informativeness. Ghosh et al. (2020) find that the benefits of increased disclosure quality under IAS 40 are greater for larger firms than smaller firms.

Although the informational role of disclosure on fair value estimates is expected to be prominent during market volatility (Boone et al., 2020; Kim & Park, 2009), studies that cover the 2008 GFC period fail to provide evidence supporting this notion (e.g., Vergauwe & Gaeremynck, 2018; Weiss & Shon, 2017). During the 2020 COVID pandemic, the market uncertainty is a very different experience, especially for the real estate sector, because this is not any market bubble bursting through the property market, as in the 2008 GFC. The fifth research question posed in this thesis utilises the market uncertainty of 2020 and examines whether supplementary disclosures on Level 3 properties influence investors' pricing of fair value adjustments differently during the uncertainty of 2020 relative to the pre-uncertainty period (*RQ5*).

To sum up, the value relevance of fair value information has been and continues to be a fruitful area of academic research. The classic faithful representational concerns which come from investors' perspectives predominantly

motivate this stream of studies. Due to the lack of machine-readable data in this area, several avenues of research are still underexplored. This thesis attempts to address some of these unresolved research problems, specifically focusing on three areas: the borrowing covenant violation concerns of investors, the fair value expertise of auditors, and supplementary fair value disclosures in times of market uncertainty. The findings will be of interest to regulators, policymakers, investors, managers of real estate firms or other financial market stakeholders.

2.4 Research Framework

The insights drawn from the institutional settings and fair value accounting literature and the theoretical perspectives used to identify the research problems are summarised in *Figure 2.1*.

The joint conceptual framework for financial reporting developed by the FASB and the IASB characterises financial information as decision-useful if it is relevant and faithfully represents what it purports to represent (IASB, 2018). A common way to investigate whether financial information is useful to investors is to estimate its incremental association with share prices or share returns, after controlling for other accounting and market information (Ball & Brown, 1968; Barth, 2007; Barth et al., 1996; Landsman, 2007); this is known as the value relevance research. As per Barth et al. (2001), information is value relevant if it has a predicted association with the market value of equity. This is based on capital market theory, which posits that market participants use all available relevant information when making investment decisions. Therefore, in a "semi-strong" form of market efficiency, share prices, on average, reflect all publicly available information (Beaver, 1981; Fama, 1970, 1991).

I adopt this characterisation of value-relevant financial reporting information in empirical tests, explicitly focusing on the value relevance of fair value information (*RQ1*). Motivated by the agency cost and contracting theory, I then argue that for firms approaching the violation of borrowing covenant, the perceived managerial bias in Level 3 fair value estimation is greater, and thus the value relevance of fair value adjustments is lower (*RQ2*). Drawing on agency theory, next, I contend that investors perceive auditors with fair value expertise as high-quality monitors and reflect this while pricing fair value adjustments (*RQ3*). Finally, drawing on the disclosure literature, I examine the role of discretionary disclosure in signalling transparency to auditors (*RQ4*), and enhancing the decision-usefulness of fair value adjustments to investors (*RQ5*).

Figure 2.1: Research framework

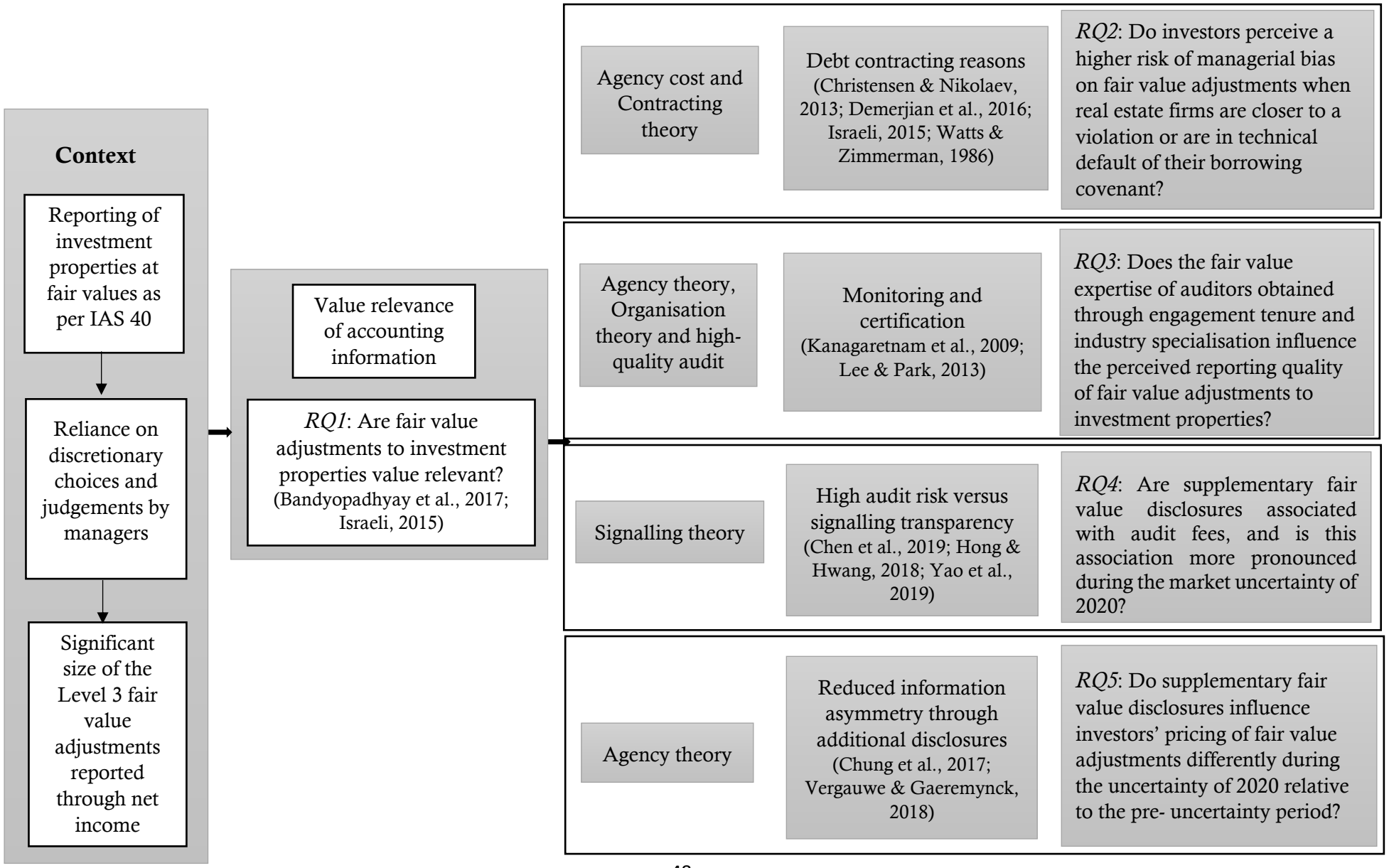


Table 2.1 Studies on fair value of investment properties

Authors (Year)	Focus of study	Sample	Period	Research Design	Main Findings
Panel A: Drivers of choice: fair value versus cost model					
Christensen & Nikolaev (2013)	Determinants of fair value for investment property	UK & German	2005–2007	Logistic regression	Fair value choice is positively associated with real estate being a primary activity. The reliance on debt financing is positively associated with the use of fair values.
Dietrich et al. (2000)	Reliability of fair value estimates	UK property industry	1988–1996	Rank regression	Managers are more likely to select fair value model to report higher earnings, time asset sales to smooth reported earnings changes, smooth reported net asset changes and boost fair values prior to raising new debt.
Israeli (2015)	Factors associated with the choice of fair value versus cost model	European Union (EU): France, Germany, Italy, & Spain	2005–2010	Cross-sectional probit model	Contractual incentives (i.e., higher leverage and more dispersed ownership) and asset-pricing incentives (i.e., less smooth operating income relative to cash flows from operations and larger investment property-related gains) explain the fair value versus cost model choice.
Mäki et al. (2016)	Ownership structure and the choice of fair value versus cost model	EU real estate firms	2009–2013	Logistic regression	Companies with a financial company as the largest owner are more likely to choose the fair value model.

Quagli & Avallone (2010)	Drivers of choice: fair value versus cost model	EU real estate: Finland, France, Germany, Greece, Italy, Spain and Sweden	2005–2007	Mann–Whitney two-sample rank-sum test Multinomial logistic regression	Information asymmetry, contractual efficiency and managerial opportunism explain the fair value choice. Political costs (proxied by size) reduce the likelihood of using fair value. Market-to-book ratio is negatively associated with the fair value choice. Managerial opportunism (proxied by earnings smoothing) is negatively related to fair value choice. Contracting costs (proxied by leverage) and litigation costs do not influence the choice.
Taplin et al. (2014)	Fair value versus historical cost	Randomly selected Chinese listed companies	2008	Logistic regression	Half of the companies use fair value while half use historical cost, suggesting the lowest possible level of comparability when there are two choices of method. Companies with an international influence (listed on international stock exchanges) and companies with above-average volatility in earnings are more likely to use fair value.
Panel B: Relevance and reliability of fair values					
Bandyopadhyay et al. (2017)	Predictive ability of fair value adjustments Role of accounting conservatism	Canadian real estate firms	2011–2014	Ohlson price model Doyle cash flow model	Fair value adjustments are positively associated with future cumulative cash flows and concurrent stock price. Firms that practice high levels of accounting conservatism in the pre-IFRS period exhibit higher levels of relevance on the property revaluations in the post-IFRS regime. The market assigns higher values to fair value adjustments of more conservative firms.
Danbolt & Rees (2008)	Historic cost versus fair value model	British real estate & investment fund industries	1993–2002	Basu reverse regression model	Fair value income is considerably more value relevant than historic cost income. In the presence of changes in fair value adjustments balance sheet values, income measures become largely irrelevant.

Dietrich et al. (2000)	Reliability of fair value estimates	UK property industry	1988–1996	Rank regression	Fair value estimates are less biased and more accurate measures of selling price than respective historical costs. Reliability of appraisal estimates increases when monitored by external appraisers and Big 6 auditors.
Israeli (2015)	Value relevance of fair value versus cost model amounts	EU: France, Germany, Italy, & Spain	2005–2010	Ohlson price model Easton returns model	Investors place smaller valuation weights on disclosed amounts. Recognised and disclosed amounts are equally relevant for future financial outcomes.
Müller et al. (2015)	Reliability of fair value versus cost model	EU real estate firms	2003–2012	Bivariate probit estimation	The market applies a discount to disclosed fair value. The discount is attenuated when reliability is high, proxied via use of an external appraiser. The discount is attenuated when information processing costs are low, proxied via high analyst following.
Nellessen & Zuelch (2011)	Reliability of fair values	EU listed property companies	2005–2007	Net asset value (NAV) deviations model	Net asset value departs from the market capitalisation. The deviations are caused by insufficient reliability of fair values because of the limitations of appraisals, the diversity of applied approaches and the reliability problem for Level 3 estimates.
Owusu-Ansah & Yeoh (2006)	Relative value relevance of alternative methods	NZX firms with investment properties	1990–1999	Likelihood-ratio test, the F-test, Ohlson price model	Recognition of unrealised gains in the income statement is not superior to or significantly different from recognition of unrealised gains in revaluation reserve in terms of their value relevance.
Sangchan et al. (2020)	Fair value measurement-related disclosure for debtholders	Australian real estate industry	2007–2015	Cost of debt model Panel regression	Changes in fair value of investment property are informative about the firm's future cash flow to debtholders. The use of Level 3 and Level 2 inputs makes no difference in impacts on the cost of debt. Employing the directors solely in valuation may lead to a higher cost of debt. An extensive fair value disclosure appears to offer no additional value in the debt decision.

So & Smith (2009)	Value-relevance of presenting changes in fair value in the income statement	Listed property companies in Hong Kong	2004–2006	Return model and abnormal return model	Presenting fair value gains or loss in the income statement has higher value-relevance relative to presenting them in the revaluation reserve.
Panel C: Influence of fair value amounts on information asymmetry					
Ghosh et al. (2020)	Adoption of IAS 40, information asymmetry, valuation uncertainty & liquidity.	Real estate companies listed in Europe	2002–2017	Random effects model	Adoption of IAS 40 reduces information asymmetry for investors and increases pricing efficiency and liquidity. Larger firms benefit more than smaller firms from the increased quality of disclosure. Fair value disclosure exacerbates net asset value deviation and illiquidity during the crisis period.
Hsu & Wu (2019)	Fair value and stock price crash risk	Firms listed on China's A-shares market	2007–2011	Logit regression of stock price crash risk	Firms that recognise investment property at fair value experience an increase in crash risk, suggesting that fair value reporting does not convey private managerial information regarding firm value and could be a channel for concealing information. The association between fair value reporting and increased crash risk is mitigated in firms with strong corporate governance.
Liang & Riedl (2013)	Fair value versus historical cost model & analyst forecast accuracy	UK and US investment property	2002–2010	Multivariate analysis of NAV and EPS forecast error	Net asset value forecasts for UK firms are more accurate relative to those for US firms, consistent with the fair value revealing private information that is incorporated into analysts' balance sheet forecasts. The greater accuracy is attenuated during the financial crisis of 2007–2008, consistent with convergence of the fair value and historical cost models during this period. US firms have greater EPS forecast accuracy relative to UK firms, when the latter report under IFRS.

Muller et al. (2002)	External monitoring of property appraisal estimates and information asymmetry	UK investment property firms	1990–1999	Bid-ask spread model of information asymmetry	Market makers perceive lower information asymmetry for firms employing external appraisers versus those employing internal appraisers. This suggests that reliability differences attributable to differential monitoring by appraisers can affect information asymmetry, and therefore cost of capital.
Müller et al. (2011)	Mandatory fair value and information asymmetry	EU real estate firms	2005–2009	Bid-ask spread model of information asymmetry	Mandatory adoption of fair value means firms exhibit a larger decline in information asymmetry. However, they continue to have higher information asymmetry than voluntary adoption firms. That is, a mandatory reporting regime can reduce, but not necessarily eliminate, information asymmetry differences across firms.
Vergauwe & Gaeremynck (2018)	Measurement-related fair value disclosures and information asymmetry	EU real estate firms	2007–2010	Bid-ask spread model of information asymmetry	Provide some evidence that measurement-related fair value disclosures reduce information asymmetry. Authors find a negative association between the extent of fair value disclosures and the bid-ask spread but no association with zero returns and price impact.
Panel D: Use of managerial discretion					
Chen & Tang (2017)	Fair value adjustments, executive compensation and governance	Property firms listed in Hong Kong Stock Exchange	2000–2009	Pooled regression model	Fair value adjustment is a determinant of executive compensation after IFRS adoption in 2005. Fair value adjustments–compensation association is driven by firms with relatively weak corporate governance structure.
Chen et al. (2020)	Opportunistic use of discretion to manage performance	China	2007–2015	Jones discretionary accruals model Logistic models	Fair value reporting is driven by managerial opportunism. Fair value model is more likely be chosen by firms with greater needs for accounting discretion. Fair value adopters use the unrealised gains and losses to smooth earnings and meet or beat earnings benchmarks after IFRS adoption.

Pinto (2013)	Asset value management	Portuguese real estate investment funds	2003–2009	NAV model	Fund managers manage asset valuations to avoid net asset value declines, particularly in a period of financial distress. Funds with a higher level of past unconditional conservatism are more likely to manage asset values. Audit quality reduces managerial discretion and the conflicts that may arise between fund management company shareholders and fund participants.
Sikalidis & Leventis (2017)	Unrealised fair value adjustments and dividend policy	Firms listed on the Athens Stock Exchange	2006–2008	Earnings persistence	Fair value adjustments are persistent, i.e., they reliably predict future income. Companies that revalue investment properties tend to increase dividend payouts. Less optimistic managers, firms with a higher borrowing capacity, and firms with higher levels of insider ownership are more likely to increase dividend payouts coming from property adjustments, with insider ownership exerting the strongest effect.
Panel E: Influence of disclosure					
Ghosh et al. (2020)	Adoption of IAS 40	Real estate companies listed in EU	2002–2017	Random effects model	Larger firms benefit more than smaller firms from the increased quality of disclosure.
Sundgren et al. (2018)	Analyst coverage, market liquidity and disclosure quality	EU real estate companies	2009–2014	Disclosure index Logistic regression	Disclosure quality on fair values is significantly higher under IFRS 13 than under IAS 40. The disclosure quality is positively associated with analyst following and bid-ask spreads. The improved disclosures following the adoption of IFRS 13 are not associated with significant positive economic consequences.
Vergauwe & Gaeremynck (2018)	Measurement-related fair value disclosures and information asymmetry	European real estate firms	2007–2010	Disclosure index Bid-ask spread model of information asymmetry	Fail to find evidence that firms using Level 3 estimates benefit from additional disclosure.

Panel F: Fair value and audit fee					
Goncharov et al. (2013)	Fair value and audit fees	EU real estate industry	2001–2008	Difference-in-differences design	Audit fees are lower for firms reporting property assets at fair value relative to those reporting at depreciated cost. Audit fees are lower for firms with above-average exposure to fair-valued assets and higher for multiple-sector property portfolios.
Sangchan et al. (2020)	Fair value and audit fees	Australian real estate industry	2007–2015	Audit fee model	There is a negative (positive) association between audit fees and fair value exposure (changes in fair value). The use of Level 3 inputs does not significantly increase audit risk and audit fees. Audit fees are higher for firms with fair values estimated by external and mixed valuers – compared to firms with fair values estimated by directors alone.
Yao et al. (2015)	Fair value and audit fee	ASX 300 companies	2003–2007	Audit fee model	There is a significant increase in the audit fees paid when non-financial assets (PPEs, investment properties and intangible assets) are measured at fair values. An independent valuer or appraiser significantly weakens the positive association between asset revaluations and audit fees. Companies whose non-current assets are revalued upwards and those that revalue their non-current assets upwards every year have significantly higher audit fees. The strength of corporate governance has a moderating effect on the level of audit fees.

CHAPTER THREE:

COVENANT VIOLATION CONCERNS & INVESTORS' PRICING OF FAIR VALUE ADJUSTMENTS

3.1 Introduction

The valuation of Level 3 fair value estimates has attracted extensive attention from academics, policymakers, practitioners and investors because of its complex nature and increasing prevalence in financial reporting (Bratten et al., 2013). The unavailability of market data, the selection of a valuation model from multiple techniques, the use of forward-looking assumptions and a heavy reliance on managerial discretion all contribute to the high measurement uncertainty of Level 3 fair value estimates. Song et al. (2010) and Goh et al. (2015) find that the value relevance of Level 3 fair value estimates is lower than Level 1 and Level 2 fair values due to the perceived managerial bias or measurement error, which add to the faithful representational concerns from investors' perspectives. Prior studies show that lower market valuations of Level 3 fair values occur when the capital adequacy ratios of banks are closer to the minimum required by regulators (Goh et al., 2015; Robinson et al., 2018), when the corporate governance mechanisms are weaker (Huang et al., 2016; Song et al., 2010), and when there are earnings management incentives or concerns of less liquidity and disclosure opacity (Bagna et al., 2015). The high risk of violating borrowing covenants is yet another reason that might cause the capital market discount (Aboody et al., 1999), but it remains underexplored in fair value accounting literature.

The violation of a borrowing covenant is costly (Beneish & Press, 1993), and managers are likely to use accounting discretion to avoid such a violation (Watts & Zimmerman, 1986). Demerjian et al. (2016) find that fair value reporting has an impact on the financial covenants used in the borrowing contracts. Extant research provides evidence that the debt contracting incentive, measured by leverage ratios, influences managers' decision to choose fair value over the cost model (Christensen & Nikolaev, 2013; Israeli, 2015) and subjects changes in fair value to greater managerial bias (Cotter & Zimmer, 1995). Therefore, one might argue that investors perceive the extent of opportunistic bias to increase when managers have incentives to influence debt contracting capacity. Consistent with this view, studies (Aboody et al., 1999; Easton et al., 1993) show that the association between asset revaluation amounts and future performance, prices, and returns is weaker for highly levered firms. However, studies have also documented no influence of high leverage on managers' decisions (DeAngelo et al., 1994; Healy & Palepu, 1990). In this study, I link the Level 3 fair value controversy with debt contracting theory. I utilise a research setting in which the fair value assets are more tangible and illiquid, the changes in fair values directly impact reported earnings, and the reliance on debt financing is substantial. I research the real estate firms listed in Australia and examine whether investors' pricing of Level 3 fair value adjustments is different for firms closer to violating or in technical default of borrowing covenants than for firms that are far from violation.

The unique features of the real estate setting allow me to test hypotheses and draw conclusions unreachable in previously analysed sectors, e.g., the US banking and insurance industry. First, the real estate sector tends to be highly levered (Barclay et al., 2013; Doan & Nguyen, 2018; Muller III et al., 2011), and interest charges constitute a significant portion of total expenditure (Ooi et al., 2010). Australian real

estate firms, on average, hold a debt to asset ratio of 33 percent with a maximum ratio of 99 percent, indicating a higher likelihood of debt covenant violations. Second, Level 3 investment properties constitute a significant proportion of the total assets (on average, 72 percent of total assets in the sample), adjustments made to the valuations per annum are material and directly affect net income (on average, fair value adjustments constitute 33 percent of the earnings before tax in the sample). This means that fair value adjustments are highly important for capital market participants in the real estate setting, and the economic consequences of estimation errors are likely to be substantial. Third, unlike the banking sector, real estate is not heavily regulated and monitored and thus provides a setting where measurement uncertainty for Level 3 properties is expected to be higher. Moreover, this setting permits the control of non-discretionary components of the reported fair value adjustments because market-wide capital appreciation measures are readily available for investment properties. For example, the Property Council of Australia periodically publishes a performance index of property returns, and hence the separation of the discretionary part of the fair value adjustments is possible to some extent.

Using a sample of 444 firm-year observations from 2007 to 2019, I find that fair value adjustments are significantly positively associated with stock returns, implying that investors place valuation weights on fair value adjustments. However, investors incrementally discount the fair value adjustments for firms closer to the violation or in technical default of their borrowing covenants. This is consistent with investors' faithful representation concerns around Level 3 fair value adjustments due to higher likelihood of borrowing covenant violations and supports the notion that perceived managerial intention is a crucial consideration for the pricing of Level 3 fair value estimates.

Next, I classify the borrowings to analyse whether the discount effect changes across different borrowing categories because lenders exercise varying degrees of monitoring based on the maturity and security of the loans, and managers' motivations may vary accordingly. I find that the pricing discount on fair value adjustments is significant for firms with higher secured borrowings and higher long-term borrowings. This supports the notion that investors suspect managerial bias and lower reliability of fair value adjustments when firms hold a high level of secured or long-term borrowing. This also extends the prior findings that, to enhance creditworthiness, managers in firms with high secured borrowings are more likely to use discretion to boost the valuation of non-current assets pledged as collateral (Cotter & Zimmer, 1995) and shows that investors perhaps account for any such possibility. I further interpret the findings as indicating that investors may translate a high level of long-term borrowing as managers having greater incentives to make discretionary use of fair value adjustments, fearing a stricter penalty by the lender on breach of covenant.

Since more than 80 percent of the borrowing contracts of real estate firms are classified as long term, around 70 percent of which are secured, I break down the long-term borrowings as long-term secured and long-term unsecured borrowings to disentangle the effect of maturity and security. I find the valuation discount on fair value adjustments holds only for the firms with higher long-term secured borrowings. In contrast, investors think fair value adjustments are more informative for firms with higher long-term unsecured borrowing. The finding of lower perceived information risk is in line with the reasoning that access to unsecured borrowing (especially with longer terms) is often exclusive to high credit quality firms (Luk & Zheng, 2021). Lenders tend to impose stricter scrutiny on the financial reporting process of unsecured borrowers due to the risk of the debt being uncollectable in the event of

default, and managers have very low incentives to boost collateral values. All these may lead to reduced concerns about managerial bias and the incremental pricing of fair value adjustments.

In additional tests, I extend the analysis by considering whether the discount on fair value adjustments for real estate firms at high risk of covenant violation is contingent upon the strength of the corporate governance mechanism. I find that the decremental valuation implication due to high gear is significant only in the weaker governance sub-sample. More specifically, investors' discounts on fair value adjustments for firms with higher secured borrowing and higher long-term borrowing, and incremental valuations for firms with higher long-term unsecured borrowing, hold in the weaker governance sub-sample but not in the stronger governance sub-sample.

This study contributes in several ways to prior research examining the informativeness of fair value information. I build upon the works of Song et al. (2010), Demerjian et al. (2016) and Israeli (2015) in further developing the existing understanding of the impact of closeness to borrowing covenant violation on the investors' valuation of fair value estimates. First, while prior studies provide evidence of an incremental discount on fair values by investors in the presence of a lower capital adequacy ratio (Robinson et al., 2018), liquidity concerns (Bagna et al., 2015) and earnings management concerns (Chong et al., 2012), I extend the investigation to concerns about covenant violation as an added explanation of discount. I show that investors consider Level 3 fair value estimates of firms close to the violation or in technical default of borrowing covenant less trustworthy. This suggests that managers of real estate firms should be more careful while reporting changes in property fair values, as investors are aware of such opportunism and factor that into their pricing decisions.

Second, the result that the negative influence of high gear may not hold consistently for all borrowing types suggests the level of monitoring and flexibility by lending authorities due to the distinct nature of the borrowing can have a differential impact on the perceived measurement bias. Investors appear to be more concerned about bias in measuring fair value estimates for higher secured borrowing and higher long-term borrowing firms, while they perceive a substantially lower information risk for firms with higher long-term unsecured borrowing.

Third, the findings that the faithful representation concerns about Level 3 fair value adjustments are significant in the context of weaker governance mechanisms, but not in the context of stronger governance mechanisms, suggest that governance strength can mitigate concerns around fair value adjustments arising due to closeness to borrowing covenant violation in a real estate setting. Even though few studies document lower information asymmetry of Level 3 fair values for firms with stronger governance (Mechelli & Cimini, 2019; Siekkinen, 2017; Song et al., 2010), none of them examines this association in the presence of high debt contracting-related incentives. This study extends the assumption of a positive association between corporate governance and accounting quality into the area of the value relevance of fair value information and debt contracting reasons.

The remainder of this study proceeds as follows. Section 3.2 discusses the institutional background. Section 3.3 reviews the literature and provides the theoretical basis for the empirical predictions of the study. Section 3.4 describes the research design and empirical models. Section 3.5 presents the data and results, and Section 3.6 offers concluding remarks.

3.2 Institutional Background

3.2.1 Reporting of fair value adjustments under IAS 40 and use of managerial discretion

The focus on the fair value adjustments to investment properties is motivated by the provision of IAS 40 *Investment Property* (adopted as AASB 140) to recognise investment properties at fair values (IAS 40.30) and the reporting of changes in values through earnings (IAS 40.35). Gains and losses flow through net income not only when they are realised but also when managers recognise any changes in an asset's value, i.e., unrealised gains/losses, which is permitted for only a few asset classes by the IFRS. The IASB states that such accounting treatment is necessary for reporting the financial performance of investment properties in a meaningful way (IASB, 2003, para. BC44). If managers adopt efficient accounting choices, fair value adjustments reflect their private information and improve the relevance of the estimation (Bandyopadhyay et al., 2017). But if managers are opportunistic, they might use the permitted discretion to manipulate adjustments and hinder the faithful representation of reported amounts (Chen et al., 2020; Dietrich et al., 2000).

Real estate managers are likely to face motivations to use the discretion permitted in Level 3 valuations to avoid the violation of borrowing covenants for at least two reasons. First, following the violation of covenants, shareholders face substantial costs such as higher interest rates, tighter covenants, or new covenants and reduced access to credit (Beneish & Press, 1993; HassabElnaby, 2006; Nini et al., 2012). The use of managerial discretion to improve borrowing capacity could be beneficial to shareholders when the firm is at high risk of violation. Second, since the majority of investment properties are valued at Level 3 (Sundgren et al., 2018), a relatively small change in a single assumption or model input (e.g., capitalisation rate, growth rate, future rent, occupancy rate) could materially impact the earnings, asset values and equity, which in turn affects the calculation of covenant ratios. The

commonly used accounting ratios in borrowing contracts of the sample firms (i.e., gearing, interest coverage and loan to value) could be influenced easily by a small tweak in the inputs to the Level 3 valuation method. Although firms involve external valuers (periodically) and auditors to verify the model inputs, challenging the estimation is complex because the nature of fair value is such that often well-trained valuers disagree on the adjustments (Bratten et al., 2013). Hence, investors' concerns about managers abusing the discretion permitted in the fair value reporting of investment property for firms at high risk of borrowing covenant violation is valid in this setting.

Alternatively, in the Australian real estate setting, efficiency might dominate incentives in financial reporting because of the transparent and stronger institutional governance mechanism. As per the Australian Corporate Governance Transparency Index (ACGTI) 2020, the real estate sector ranks as the leader among 10 sectors of the Australian Securities Exchange (ASX) 300 in terms of corporate governance disclosure transparency.[8] Australian real estate firms tend to have superior business ethics policies and limited involvement in incidents (Sustainalytics, 2020). Further, the measurement-related disclosures for investment property have been extensive since the adoption of IFRS 13 in 2013, and most of the real estate firms use external valuers in the valuation process along with their managers.[9] Prior studies indicate that investors perceive a lower measurement uncertainty in Level 3 fair values for firms with stronger governance (Song et al., 2010), firms that make detailed measurement-related disclosures (Laux & Leuz, 2009) and firms that use external valuation services (Kolev, 2019). Thus, this setting permits me to investigate whether

[8] 28 individual disclosure aspects were considered in constructing the index.

[9] While the managers update the valuation on a regular basis, independent valuers appraise the value periodically, with the period not exceeding three years (source: observation in notes to financial statements of Australian real estate firms).

the valuation of fair value adjustments is conditional on the concerns about borrowing covenant violation when there is strong institutional governance, measurement-related disclosures are detailed, and valuers involved in the valuation process are independent.

3.2.2 Nature of borrowing arrangements – Australian real estate sector

In Australia, real estate firms typically use bank borrowings, commercial notes, commercial mortgage-backed securities, lease liabilities, domestic/foreign medium-term notes, loans payable to related parties, and miscellaneous credit facilities offered by banks (e.g., overdrafts) for financing. Borrowings are classified based on maturity (i.e., long term and current) and security (i.e., secured and unsecured). Table 3.1 shows the proportion of the different borrowing categories relative to the total borrowing (Panel A), provides the descriptive statistics of each borrowing type (Panel B) and summarises covenant-related information disclosed by the real estate firms in notes to the financial statements by year (Panel C). Panel A shows that, on average, long-term borrowings constitute above 80 percent of the total borrowing, of which 70 percent are backed by the security, e.g., tangible assets or investment properties owned by the firms. A large proportion of the total borrowings, around 71 percent, are of a secured nature, indicating that managers have the motivation to maintain the property values used as securities at a certain level (Cotter & Zimmer, 1995). Panel B shows that, on average, the borrowing to asset ratio (*GEAR*) is 32.50 percent, with a maximum ratio of 99 percent. The mean (median) interest coverage (*COVERAGE*) is 5.78 times.

Panel C reports a yearly summary of borrowing covenant information disclosed in the notes to financial statements. Borrowing covenants are set by the banks/lenders, a breach of which might lead to the renegotiation, cancellation, or reclassification of borrowings, incurring additional cost to the firm. Two widely used

covenants[10] are (i) gearing; and (ii) interest coverage. Out of 444 firm-year observations, covenant-related information was disclosed by 300 observations, which is 68 percent of the sample. Although the number of covenants disclosed in the notes ranges from one to six, the median number is two. Of the two major covenants, interest coverage is the more commonly used covenant, observed in 229 firm-years, whereas gearing ranks second in terms of the frequency of use, reported in 162 firm-years. In most cases, coverage is paired with either gearing or loan to value ratio. The median coverage is 2:1 (minimum ratio), and the median gearing is 50 percent (maximum percentage) for the sample firms. I use these medians as the benchmark to identify firms that are at high risk of covenant violation.

Table 3.1 about here

3.3 Prior Research and Development of Hypotheses

3.3.1 Level 3 fair value controversy and market pricing

The debate on the relevance and reliability of fair value measurements is long-standing in fair value research (Landsman, 2007). If managers are efficient and convey private information, fair value information has greater relevance, more accurately reflects volatility, and enhances financial reporting transparency (Barth, 2006; Barth et al., 2001). However, the increasing prevalence of fair value reporting has the potential to decrease the usefulness of accounting information for contracting (Holthausen & Watts, 2001; Kothari et al., 2010) and increase the volatility of earnings (Barth et al., 1995). While most previous studies indicate that fair value information is decision-useful (Barth, 1994; Barth et al., 1996; Barth & Clinch, 1998),

[10] Other covenants include loan to value ratio, gearing on a look-through basis, credit rating, dividend payout restriction, capital adequacy, ratio of 'net cash inflow' to gross interest, ratio of debt to earnings before interest, taxes, depreciation and amortisation, priority indebtedness ratio, weighted average lease expiry and so on.

more recent studies show that the perceived informativeness may vary across the fair value hierarchy.

Three previous studies examine the value relevance of fair value hierarchy information (Goh et al., 2015; Kolev, 2019; Song et al., 2010). These studies document that investors consider Level 1 and Level 2 fair value assets relevant and reliable because the market prices are observable (either directly or indirectly), and the information risk is lower. However, the evidence on Level 3 fair value market valuation is inconclusive. While Song et al. (2010) document that Level 3 fair value estimates are priced at a discount relative to Level 1 and Level 2 fair values during the financial crisis of 2008, Goh et al. (2015) show that the discount is no longer significant when the market conditions stabilise. Nonetheless, both studies report that Level 3 fair values are positively priced.

Measurement uncertainty is high for Level 3 fair value estimates because they rely heavily on managerial discretion, use subjective and forward-looking assumptions and are difficult to verify (Bratten et al., 2013). Many of the fair value studies indicate that managers use Level 3 fair value to achieve self-serving motives, such as attaining capital adequacy targets (Robinson et al., 2018), managing earnings (Barth et al., 2017; Chong et al., 2012), enhancing compensation (Livne et al., 2011) and improving borrowing capacity (Christensen & Nikolaev, 2013). However, findings also show investors recognise such opportunistic bias and penalise the Level 3 estimates while pricing. For instance, Robinson et al. (2018) and Goh et al. (2015) find evidence consistent with investors applying an incremental discount on Level 3 assets for firms closer to their capital adequacy target. Bagna et al. (2015) observe that the market negatively judges transfers from Levels 1 and 2 to Level 3 if they are larger. Riedl and Serafeim (2011) show that banks with greater exposure to Level 3 assets exhibit higher betas and that information risk is more pronounced for banks with ex-

ante lower quality information environments. Song et al. (2010) document a lower valuation discount for Level 3 assets for firms with stronger corporate governance mechanisms. Thus, research suggests that although Level 3 fair values are generally value relevant, the incentives for managerial bias can raise questions regarding their informativeness.

Notably, most of these Level 3 fair value studies have been carried out on financial assets using the banking context, predominantly in the US setting, which is characterised by a unique financial reporting environment. A little attention is given to the other asset classes, such as investment properties, biological assets or property, plant and equipment. The majority of studies use the investment property context to test the drivers of the fair value model versus the cost model choice (Dietrich et al., 2000; Mäki et al., 2016) or the relative value relevance under the two options (Israeli, 2015; Müller et al., 2015), but they remain silent as to whether and to what extent perceived information risk could influence investors' property valuations. This study attempts to address this issue empirically.

3.3.2 Value relevance of fair valued investment properties

In the context of investment properties, existing research suggests that fair value amounts (i.e., revaluation gains and fair valued investment properties) are relevant for future financial outcomes, and investors place a positive valuation weight on the fair value estimates. Bandyopadhyay et al. (2017) find that fair value adjustments are positively associated with future cumulative cash flows and concurrent stock price. Israeli (2015) shows that fair value amounts are significantly positively associated with changes in net rental income one and two years ahead, as well as cash flow from operations. Israeli (2015) further documents a positive association between fair value

amounts and share price, stock return, and a higher market valuation of the fair value model than the cost model. Similar findings are also reported by Müller et al. (2015).

Even though the positive fair value–return association is well established, most of these studies are carried out in UK and European contexts. The Australian setting is different from any other setting because revaluations of properties were allowed long before the adoption of IFRS, indicating that measurement errors are less likely due to the long managerial experience with property valuations. Hence, following the previous findings, I begin with the prediction that the positive market valuation of fair value adjustments holds for the real estate market in Australia.

$H_{3.1}$: *The fair value adjustments to the investment properties are positively associated with stock returns.*

3.3.3 Contracting theory and impact of covenant violation concerns on market pricing

The contracting theory framework predicts an association between the existence of debt covenants and the use of accounting discretion. The underlying premise of this prediction is that violation of covenants is costly to the shareholders (Beneish & Press, 1993, 1995). The violation of covenants gives rise to substantial direct and indirect costs like higher interest rates, stricter covenants, or new covenants and reduced access to credit (Beneish & Press, 1993; HassabElnaby, 2006; Nini et al., 2012). Following technical default, lenders use their control rights in ways that increase the plausibility of loan repayment but impose costs on shareholders, for example, forcing firms to reduce capital expenditures, net debt issuance or the number of acquisitions, which can further reduce the equity value (Chava & Roberts, 2008; Demiroglu & James, 2010; Denis & Wang, 2014; Dyreng et al., 2020). Therefore, as with every costly activity, managers have incentives to avoid covenant violations.

According to the debt covenant hypothesis, managers of firms at high risk of covenant violation use accounting choices to avoid violation (Watts & Zimmerman, 1986). Numerous studies provide evidence supporting this hypothesis (Franz et al., 2014; Sweeney, 1994). DeFond and Jiambalvo (1994) document that managers adjust abnormal accruals upward to inflate the reported income in the year before the covenant violation and, to a lesser extent, in the year of the covenant violation. Doing so could also be in the shareholders' best interest because studies show that shareholders are strictly better off when firms successfully avoid violations using discretionary accruals (Dyreng et al., 2020). Riedl (2004) and Beatty and Weber (2006) show that the likelihood of recording goodwill impairment losses is lower for highly geared firms due to the incentives to avoid costly breaches of debt covenants. Kallapur and Kwan (2004) document significant differences in the extent of bias or error in intangible asset valuations of firms with differing levels of contracting and provide evidence consistent with the negative influence of contracting incentives on the reliability of the asset values.

Evidence in the fair value accounting literature indicates the influence of closeness to borrowing covenant violation on managers' choice of the fair value model versus the cost model (Israeli, 2015), on the direction (i.e., upward versus downward) and the timing of the reporting of change (Brown et al., 1992; Duh et al., 2009; Whittred & Chan, 1992), and on the magnitude of change (Kallapur & Kwan, 2004). For investment properties, consistent with debt contracting theory, Israeli (2015) and Christensen and Nikolaev (2013) document that real estate firms with higher leverage have a significantly higher probability of adopting the fair value model. Although the highly leveraged nature of the real estate sector means concerns about borrowing covenant violations are significant, the extant literature has yet to address how closeness to the borrowing covenant violation or the violation itself

affects the way investors perceive managerial bias in fair value adjustments estimation.

Fair value adjustments to investment properties can impact the accounting ratios used in borrowing contracts because of their direct impact on real estate asset value and reported earnings. For instance, reporting fair value adjustments upward increases the book value of total assets and equity, thereby decreasing the gearing ratio. An increase in net income improves the interest expense coverage (net income being the numerator in the coverage ratio) and indicates a higher margin of safety for borrowing repayment. Also, because a property could be used as collateral in support of borrowing, an increase in property's book value affects lenders' assessment (Cotter & Zimmer, 1995) and the loan to value ratio.

Theory suggests information risk impacts the pricing of assets (Easley & O'hara, 2004; Lambert et al., 2007). If managers have incentives to bias and enhance estimation error, lack of verifiability is likely to affect the reliability and the value relevance of the accounting numbers (Holthausen & Watts, 2001). While Level 3 assets already involve a certain degree of measurement uncertainty, closeness to borrowing covenant violation adds an additional layer to the information risk. Given the prior findings that the probability of adopting the fair value model is higher for highly leveraged real estate firms (Israeli, 2015), I expect that managers would use the discretion permitted within that choice to adjust reported amounts (Chen et al., 2020) with an effort to improve borrowing capacity, resulting in higher concerns from investors' perspectives regarding the faithful representation of fair value adjustments. Thus, I expect an incremental discount on fair value adjustments for firms at high risk of violation and for violating firms.

However, several reasons open up the possibility of covenant violation concerns having no measurable negative impact on investors' valuation of fair value

adjustments in this setting. First, lenders have superior monitoring abilities relative to other investors and may act as a disciplining device against managerial bias and force the efficient exercise of accounting discretion (AbuGhazaleh et al., 2011; Beneish & Press, 1993). Specifically, a large proportion of the borrowings in the Australian real estate sector are financed by commercial banks, insurance companies or finance companies, which are traditionally viewed as efficient monitors because of their superior access to inside information (Fama, 1985). Banks have scale economies and comparative cost advantages in information gathering that allow them to take up superior debt-related monitoring (Diamond, 1984, 1991). Second, above 80 percent of the sample real estate firms' total borrowings are long term, of which 30 percent are unsecured. Rajan and Winton (1995) indicate that monitoring incentives are high for lenders of unsecured and long-term loans because of the high risk of losing the payoff if they are not scrutinised properly. Third, the dominance of incentives could be less intense in the Australian real estate market because of a more transparent and stronger governance mechanism (ACGTI, 2020). Finally, bias in reporting fair value adjustments of investment properties can result in more costly scrutiny by auditors and regulators and enhance the probability of shareholder litigation. The probability of triggering unexpected costs might restrain managers from engaging in such behaviour. Thus, if investors are convinced that firms at high risk of violation or firms facing technical default are subject to higher scrutiny on their financial reporting process, then negative valuation implications may not be observed.

These differing reasons suggest that the covenant violation concern may either negatively affect the investors' valuation of fair value adjustments or simply have a small and/or unmeasurable impact. Given the implications of agency theory, the inconclusive findings of prior studies and the absence of any direct evidence on the

influence of concerns about borrowing covenant violations in the real estate setting, I state the second hypothesis in null form:

$\boldsymbol{H_{3.2}}$***:*** *The closeness to borrowing covenant violations does not moderate the value relevance of fair value adjustments.*

The flexibility of, risk to and monitoring by lenders may vary depending on the (i) maturity of, and (ii) security pledged against the borrowings. Thus, the nature of the contract in place can define the extent of the managerial incentive to use the permitted discretion in fair value adjustments.

Unsecured borrowing is sanctioned against the overall outlook of the balance sheet rather than against particular assets, while secured borrowing is secured by a mortgage or other forms of prior charge over the assets of the firm. Typically, unsecured borrowing is more costly due to the greater risk to lenders in the absence of collateral. In contrast, secured borrowing offers better terms and costs less. Unsecured borrowers are subject to higher scrutiny, possibly due to the worry that the lender may not recover anything in the event of default. However, to get access to unsecured borrowing, the firm has to be of high credit quality (Luk & Zheng, 2021). Sanders (2014) shows that unsecured borrowers have a small debt ratio, an enlarged Altman's Z score, consistent positive retained earnings and profitability, good turnover ratios and abundant working capital. Therefore, investors may be less concerned about the managerial bias in fair value adjustments estimation if real estate firms hold high unsecured borrowing. However, firms with higher secured borrowings are more likely to make an upward revaluation of non-current assets to enhance the value of assets pledged as collateral (Cotter & Zimmer, 1995). Since the real estate firms in this study heavily rely on secured borrowing with investment properties pledged as collateral, managers may use their discretion to make upward

(downward) fair value adjustments in a period of downward (upward) earnings to improve (smooth) contracting capacity. Alternatively, enhanced monitoring by the lenders on the property pledged as collateral may limit this possibility.

Further, interest-bearing long-term borrowings are riskier, and the interest rates are higher, while current borrowings are short-term in nature and allow more flexibility for the lender. Long-term borrowing generally faces tighter monitoring and stricter covenants, possibly inducing less concern from investors. However, a higher penalty on the breach of the existing covenants on contracts can provide managers with a greater motivation to utilise their discretion. The closer the firm is to breaching the covenant, the higher are the concerns of investors. However, reliability concerns may be minimal for firms with high current borrowing because, in this setting, the use of current borrowing is the least frequently used option (only 18 percent of the total borrowing).

Given the competing arguments in the extant literature about how the managers of real estate firms may utilise the discretionary choices around different borrowing categories, I set the following null hypothesis:

$\boldsymbol{H_{3.3}}$***:*** *The longer maturity period and secured nature of borrowing contracts do not moderate the value relevance of fair value adjustments.*

3.4 Sample and Research Design

3.4.1 Sample

The sample comprises all real estate firms listed in the ASX from 2007 to 2019. The investment property-related data, details on borrowing and covenants, and part of the governance data are hand-collected. Because this study focuses on fair value adjustments, I restrict the sample to only those firms that adopt the fair value model for investment property. The following data are manually collected from the financial

statements: (i) fair value of investment properties as reported in the statement of financial position, (ii) fair value adjustments to investment properties as reported in the income statement; (iii) information on total borrowings and borrowing types, i.e., secured, unsecured, long-term and current; (iv) borrowing covenant-related information; (v) governance variables,[11] such as the number of female board members, frequency of audit committee meetings, whether at least one audit committee member is a professional accountant, whether the firm has a risk committee, what percentage of independent board members has real estate expertise, and what percentage of audit committee members has real estate expertise. Market and accounting data items are obtained from the Eikon database.

Table 3.2 presents the sample selection procedure. I began with an initial list of 78 firms listed as 'Real Estate' in ASX as of June 16, 2019 (obtained from the Eikon database). I excluded firms that did not report investment property or did not adopt the fair value model during the sample period. This resulted in a sample of 54 publicly traded real estate firms with 496 firm-year observations. I then excluded 52 observations with missing data on key variables. This resulted in a sample of 444 firm-year observations for the period 2007–2019.

Table 3.2 about here

3.4.2 Firms at high risk of covenant violation and violating firms' sub-samples

Surveys on Australian firm debt contracts suggest that gearing ratio, interest coverage, total/secured liabilities to tangible asset ratio and current ratio are the most frequently used borrowing covenants in public contracts (Cotter, 1998; Mather, 1999; Mather & Peirson, 2006). Based on hand-collected data on the borrowing structure and covenants from the annual reports of the sample real estate firms, I identify

[11] Two governance variables, the ratio of total independent directors to total directors and Big 4 information, are obtained from Eikon.

gearing ratio (*GEAR*) and interest coverage ratio (*COVERAGE*) as the most widely used covenants. Likewise, I use *GEAR* and *COVERAGE* to measure the proximity to borrowing covenant violation (e.g., Aboody et al., 1999; Israeli, 2015; Kallapur & Kwan, 2004).

The sample of real estate firms is divided into three sub-samples (e.g., Franz et al., 2014): (i) firms at high risk of violation (CLOSE) if (a) *GEAR* exceeds 50 percent, or (b) *COVERAGE* falls below two times of earnings before interest, taxes, depreciation, amortisation and fair value adjustments (EBITDAFVA); (ii) firms that have violated borrowing covenants (DEFAULT),[12] and (iii) firms that are far from violation (FAR). *GEAR* is measured as the total borrowings divided by total assets exclusive of fair value adjustments to the investment properties at year *t*. I classify firms with *GEAR* exceeding 50 percent as close to the violation of gearing covenant (*CLOSE_GEAR=1*). I calculate interest coverage (*COVERAGE*) as EBITDAFVA divided by gross interest expense at the end of period *t*. If the *COVERAGE* of a firm is less than two times EBITDAFVA, I identify that firm as close to violation of coverage covenant, and the variable *CLOSE_COV=1*, otherwise 0.

Firms in the FAR sub-sample are well below the industry covenant thresholds, and investors are less concerned about bias in the use of managerial discretion for fair value adjustments. The CLOSE group comprises firms where managers are likely to face strong incentives to use fair value adjustments to avoid violation of covenants. The DEFAULT sub-sample facilitates testing whether and to what extent investors' valuation of fair value adjustments varies while the firm is in technical default. The FAR sub-sample serves as a control group for testing the implications of concerns

[12] To find out whether any of the real estate firms violated borrowing covenants during the sample period, I manually searched each annual report using a series of keywords (e.g., "default", "violation", "breach", "renegotiation") likely to identify technical default. I identified eight firm-year observations which mention borrowing covenant violation and renegotiation of contract. I identify this sub-sample as '*DEFAULT*'.

related to proximity to covenant violation. Together, these three sub-samples enable the devising of robust tests of the influence of closeness to violation of borrowing covenants on investors' valuation of fair value adjustments.

To examine the impact of different borrowing types, I categorise the total borrowing based on security, i.e., secured (*SECURED*) and unsecured (*UNSECURED*), and maturity, i.e., long term (*LONG*) and current (*CURRENT*), and divide each by the total assets exclusive of fair value adjustments to the investment properties at *t*. Since the sample real estate firms predominantly use secured borrowing (71 percent) and long-term borrowing (82 percent), the analyses concentrate on these two types. To facilitate the tests, I then use dummy variables for each borrowing type. *HIGH_ SECURED* is an indicator variable that equals 1 if a firm-year's *SECURED* is above its sample median, otherwise 0; *HIGH_ LONG* is an indicator variable that equals 1 if a firm-year's *LONG* is above its sample median, otherwise 0. To disentangle the effect of secured borrowing from long-term borrowing, I further break the sample down into long-term secured (*LONG_SECURED*) and long-term unsecured (*LONG_UNSECURED*) borrowings, and create dummy variables *HIGH_LONG_SEC* (equals 1 if a firm-year's *LONG_SECURED* is above its sample median) and *HIGH_LONG_UNSEC* (equals 1 if a firm-year's *LONG_UNSECURED* is above its sample median).

3.4.3 Model specifications

Following prior studies (Aboody et al., 1999; Barth & Clinch, 1998; Easton et al., 1993; Israeli, 2015), I capture the value relevance of fair value adjustments using the following stock return model:

$$RETURN_{it} = \beta_0 + \beta_1 NI + \beta_2 \Delta NI_{it} + \beta_3 FVA_{it} + \beta_4 VOLAT_{it} + \beta_5 MTB_{it} + \beta_6 SIZE_{it} + \beta_7 LOSS_{it} + \beta_8 INDEX_{it} + \beta_9 GVSCORE_{it} + Year\ fixed\ effects + \varepsilon_{it} \quad (3.1)$$

RETURN is the stock market return of firm i at year *t*, measured from three months after year-end for year *t-1* to three months after year-end for year *t*. *NI* is earnings before fair value adjustments in period *t*, *ΔNI* is the annual change in earnings before fair value adjustments in period *t*, and *FVA* is fair value adjustments recognised in earnings, all deflated by the beginning market value of equity (Barth & Clinch, 1998; Nelson, 1996). The variable of interest for $H_{3.1}$ is β_3. A statistically significant positive value for the coefficient would suggest that investors place valuation weights on fair value adjustments to investment properties.

I control for several variables that prior research has documented are associated with stock return. *VOLAT* is the volatility of returns, calculated as the standard deviation of monthly returns in period *t-1*; *MTB* is the ratio between the beginning market value of equity and the book value of equity; *SIZE* is the natural log of the beginning market value of equity; *LOSS* is a dummy variable coded 1 if firm reported negative net income for fiscal year *t*, and 0 otherwise. In addition, I control for the property price movements and macroeconomic trends, (e.g., Chen & Tang, 2017) by including *INDEX*. *INDEX* represents the annual percentage of property return during the fiscal year based on all assets as determined by the Property Council/IPD Australian property index obtained from MSCI's index database. *GVSCORE* is the factor score based on eight governance characteristics, namely: board independence (*INDDIR*); independent board members with real estate expertise (*REXP_INDDIR*), audit committee real estate expertise (*REXP_AUD*), and audit committee accounting expertise (*ACEXP*); frequency of annual audit committee meetings (*ACTIVITY*); gender diversity (*GENDER*); risk committee (*RISK*); and Big 4 audit firm (*BIG4*). More details on *GVSCORE* are provided in section 3.5.2.

To test whether investors differentially price Level 3 fair value adjustments of firms at high risk of violating borrowing covenants and firms that violated covenants relative to firms that are far from violation ($H_{3.2}$), I use the following regression model:

$$RETURN_{it} = \beta_0 + \beta_1 NI + \beta_2 \Delta NI_{it} + \beta_3 FVA_{it} + \beta_4\ CLOSE\_GEAR_{it} + \beta_5\ CLOSE\_GEAR_{it} \times FVA_{it} + \beta_6\ CLOSE\_COV_{it} + \beta_7\ CLOSE\_COV_{it} \times FVA_{it} + \beta_8\ DEFAULT_{it} + \beta_9\ DEFAULT_{it} \times FVA_{it} + \beta_{10}\ VOLAT_{it} + \beta_{11}\ MTB_{it} + \beta_{12}\ SIZE_{it} + \beta_{13}\ LOSS_{it} + \beta_{14}\ INDEX_{it} + \beta_{15}\ GVSCORE_{it} + Year\ fixed\ effects + \varepsilon_{it} \quad (3.2)$$

The primary variables of interest for $H_{3.2}$ are the interaction terms, *CLOSE_GEAR×FVA*, *CLOSE_COV×FVA*, and *DEFAULT×FVA.* Negative coefficient estimates on β_5, β_7 and β_9 would suggest that investors' pricing of Level 3 fair value adjustments is lower among firms at high risk of violating borrowing covenants and firms that violated covenants, relative to the firms that are far from violation, and vice versa. Finally, I include the interaction terms *HIGH_SECURED×FVA* and *HIGH_LONG×FVA* in model (3.2) to test whether long maturity and security against borrowings condition investors' pricing of fair value adjustments ($H_{3.3}$). To disentangle the effect of maturity and security, I then divide the long-term borrowings by secured and unsecured type and add the interaction terms *HIGH_LONG_SEC×FVA* and *HIGH_LONG_UNSEC×FVA* in model (3.2). I make no directional predictions.

3.5 Empirical Results

3.5.1 Descriptive statistics

Table 3.3 provides descriptive statistics for the variables[13] in the regression analysis. Panel A reports that the mean and median values of *RETURN* (mean= 0.09 and median=0.11) show that, on average, firms experience positive buy-and-hold returns during the sample period. While the mean value of pre-fair value adjusted earnings (*NI*) is positive (mean=0.03), the change in pre-fair value adjusted earnings (*ΔNI*) on average is negative (mean=-0.03). I also observe that the mean *FVA* is -0.30 percent of the market value of equity. Panel B reports that, in 12 percent of the firm-years, the gearing is above 50 percent (*CLOSE_GEAR*), and in 27 percent of the firm-years, the interest coverage is less than 2 times EBITDAFVA (*CLOSE_COV*). Panel C presents Pearson correlation coefficients for the test variables. As expected, *FVA* is positively correlated with *RETURN,* providing an initial indication of the informativeness of fair value adjustments ($H_{3.1}$). Overall, I find that the correlations among the remaining variables are moderate to low. Furthermore, the variance inflation factor (VIF) for each explanatory variable is less than 10, which indicates that multicollinearity does not pose a problem for the analysis (Hair et al., 1995).

Table 3.3 about here

3.5.2 Governance variables

The governance measures used in this study focus primarily on the board characteristics. This choice is justifiable because the literature recognises the board as the primary governance agent with monitoring roles over the entity's financial reporting process (Cadbury, 1992; DeZoort & Salterio, 2001; Francis et al., 1999; Kabir & Rahman, 2016) and influence on the decision usefulness of fair value

[13] All continuous variables are winsorised at the 1 percent and the 99 percent levels.

information (Huang et al., 2016; Siekkinen, 2017; Song et al., 2010). Because the industry expertise of independent directors contributes to board monitoring effectiveness due to a better understanding of the firm's operations, financial conditions, and unique characteristics (Wang et al., 2015), I focus on board characteristics, including expertise[14] in the property industry.

I develop a governance score based on the principal component factor analysis of eight major board variables, namely: (i) Board independence (*INDDIR*), measured by the percentage of independent board members on the board; (ii) Board real estate expertise (*REXP_INDDIR*), measured by the percentage of the members on the board that are independent and hold experience in real estate sector; (iii) audit committee real estate expertise (*REXP_AUD*), measured by the percentage of the audit committee members that hold experience in real estate sector; (iv) audit committee accounting expertise (*ACEXP*), an indicator variable that take a value of 1 if at least one audit committee member is a professional accountant; (v) *ACTIVITY*, measured as the number of audit committee meetings taking place during the fiscal year; (vi) gender diversity (*GENDER*), measured by the percentage of female board members on the board; (vii) *RISK*, a dummy variable that equals 1 if the firm has a risk committee; and (viii) *BIG4* , a dummy variable that takes a value of 1 if the auditor is a Big 4 firm.

Descriptive statistics about the board variables are presented in Panel A of Table 3.4. The average board independence is 0.56, suggesting that 56 percent of the board members in the sample are independent members. On average, 21 percent of the independent board members and 32 percent of the audit committee members have expertise in the property sector, respectively. For 91 percent of the firm-years,

[14] I read the directors' profiles section in the annual reports. I identify directors as real estate experts if they (i) have substantial governance experience in the property sector; or (ii) have been a Fellow of the Australian Property Institute (FAPI); or (iii) are a registered valuer or real estate agent.

the audit committee includes at least one professional accountant member. Roughly 14 percent of the board members are female, and 86 percent are male. A total of 18 firms (33 percent) in the sample do not appoint at least one female board member during the sample period (not tabulated). The firms' audit committee meets on average four times per year, with the range being from 0 to 17 times. 61 percent of the firms have a risk committee. Finally, around 76 percent of the real estate firms are audited by Big 4 auditors.

The correlation matrix presented in Panel B of Table 3.4 shows that firms with more independent boards tend to have higher board diversity, have a more active audit committee, have property experts and accounting experts, form a risk committee and appoint Big 4 auditors. The audit committee's real estate expertise is positively related to it being a more active committee and the appointment of a risk committee. The gender variable is positively correlated with a highly active audit committee, the appointment of a risk committee and engaging Big 4 auditors. Furthermore, firms with more frequent audit committee meetings are more likely to have a risk committee, an accounting expert within the audit committee and engage Big 4 auditors. Overall, the board variables in this study are highly correlated.

I develop a governance score (*GVSCORE*) based on the principal component factor analysis of the eight board variables to mitigate the measurement error of individual variables and to avoid potential multicollinearity problems, (e.g., Huang et al., 2016; Siekkinen, 2017; Song et al., 2010). Panel C documents the factor loading coefficients of the eight governance variables based on varimax orthogonal rotation. I find an eigenvalue of 2.08. The reported governance factor score explains 81 percent of variations in the eight variables. The Kaiser–Meyer–Olkin value is about 0.68, suggesting that the governance score statistically captures the common characteristics of the eight governance variables (Stewart, 1981). Panel D shows the distribution of

GVSCORE. The median value of *GVSCORE* is 0.18. I use the *GVSCORE* as one of the control variables in this study.

Table 3.4 about here

3.5.3 Regression results: Value relevance of fair value adjustments and influence of covenant violation concerns

The results from estimating model (3.1) and model (3.2) are presented in Table 3.5[15]. The result for the entire sample of real estate firms in column (1) illustrates a positive association between *FVA* and *RETURN* (coefficient=0.168, t-stat=3.274), indicating that fair value adjustments to investment properties are value relevant. This is in line with the findings of Israeli (2015) and Bandyopadhyay et al. (2017). The coefficient for *FVA* of 0.17 is higher than the coefficients for *NI*, meaning that stock returns are more extensively driven by fair value adjustments than by earnings.

Columns (2) to (4) present the regression results for model (3.2). The coefficients of *FVA* remain significantly positive at $p<0.01$ across all the regression specifications, suggesting informativeness of the fair value adjustments. The coefficients for *CLOSE_GEAR*×*FVA* (coefficient=-0.233, t-stat=-2.165) and *CLOSE_COV*×*FVA* (coefficient=-0.225, t-stat=-1.835) in column (2) are negative and significant. This implies that investors perceive greater faithful representation concerns for firms that are CLOSE to violation of covenants than for firms that are FAR from violation. Column (3) shows a significant negative association between *DEFAULT* firms and *RETURN* (coefficient=-0.266, t-stat=-2.489), indicating that the investors' valuation of fair value adjustments is significantly lower for the DEFAULT sub-sample than the FAR sub-sample. The coefficient of *DEFAULT*×*FVA* (-0.977)

[15] To minimise the impact of outliers, I winsorised all the continuous variables at the first and 99th percentiles. However, the descriptive statistics suggest that there are still some influential outliers within the data. To show that the results are robust, I re-run the tests using an alternative level of winsorising, i.e., at the second and 98th percentiles. I continue to find similar results.

being higher than the coefficient of *CLOSE_GEAR×FVA* (-0.223) and *CLOSE_COV×FVA* (-0.285) in column (4) indicates that firms in technical default are the biggest concern for investors.

Table 3.5 about here

Table 3.6 presents the influence of security and maturity of borrowing contracts on the market valuation of fair value adjustments. I find that the coefficients of *HIGH_SECURED×FVA* (coefficient=-.348, t-stat=-2.987) in column (1) and *HIGH_LONG×FVA* (coefficient=-0.243, t-stat=-2.565) in column (2) are significant and negative. This suggests that investors price fair value adjustments lower for firms with higher secured borrowing and higher long-term borrowing. Dividing the long-term borrowing into long-term secured and long-term unsecured borrowing, I find that while investors discount fair value adjustments for firms with a higher level of long-term secured borrowing (*HIGH_LONG_SECURED×FVA*=-0.231, t-stat=-2.237), they put a positive valuation weight on the sub-sample of higher long-term-unsecured borrowing (*HIGH_LONG_UNSECURED×FVA*=0.523, t-stat=3.191).

Table 3.6 about here

Thus, I provide evidence that, in contrast to FAR firms, investors' concerns about the opportunistic use of managerial discretion is higher for CLOSE and DEFAULT firms. The results also indicate that based on the nature of borrowing and its level, investors may perceive differential informativeness in fair value adjustments.

3.5.4 Robustness checks

Price model

To ensure the robustness of the results, I use the modified Ohlson (1995) model and examine the value relevance of fair value adjustments (Aboody et al., 1999; Barth et al., 1996; Song et al., 2010). In model (3.3), $PRICE_{it}$ is the closing share price on the

announcement date of firm's annual report. I decompose the earnings into current period fair value adjustments (*FVA_P*) and earnings before fair value adjustments (*NI_P*), and the year-end total assets into fair value of investment properties (*FVIP_P*) and total assets excluding investment property values (*TA_P*) (e.g., Bandyopadhyay et al., 2017; Israeli, 2015). *TL_P* is the year-end total liabilities. The dependent variables are deflated by the number of shares outstanding. Thus, I estimate the following model:

$$PRICE_{it} = \beta_0 + \beta_1 NI\_P_{it} + + \beta_2 FVA\_P_{it} + \beta_3 TA\_P_{it} + \beta_4 FVIP\_P_{it} + \beta_5 TL\_P_{\_it} + \beta_6 INDEX_{it} + \beta_7 GVSCORE_{it} + Year\ fixed\ effects + \varepsilon_{it} \quad (3.3)$$

To test whether investors differentially price Level 3 fair value adjustments among firms at high risk of violation, or that have violated borrowing covenants, relative to firms far away from violation, I use the following regression model:

$$PRICE_{it} = \beta_0 + \beta_1 NI\_P_{it} + \beta_2 FVA\_P_{it} + \beta_3 CLOSE\_GEAR_{it} + \beta_4 CLOSE\_GEAR_{it} \times FVA\_P_{it} + \beta_5 CLOSE\_COV_{it} + \beta_6 CLOSE\_COV_{it} \times FVA\_P_{it} + \beta_7 DEFAULT_{it} + \beta_8 DEFAULT_{it} \times FVA\_P_{it} + \beta_9 TA\_P_{it} + \beta_{10} FVIP\_P_{it} + \beta_{11} TL\_P_{it} + \beta_{12} INDEX_{it} + \beta_{13} GVSCORE_{it} + Year\ fixed\ effects + \varepsilon_{it} \quad (3.4)$$

Table 3.7 reports the regression results. Results show that *FVA_P* is significantly positively associated with *PRICE*, confirming the value relevance of fair value adjustments (Column 1). I document that investors' pricing of fair value adjustments is significantly lower for CLOSE firms and DEFAULT firms relative to FAR firms, confirming the previous results (Column 2). Although I do not find a significant negative influence of higher secured borrowing (Column 3), I observe a valuation discount for firms with higher long-term borrowing (Column 4). Furthermore, column (5) shows that while higher level of long-term secured borrowing negatively moderates the *FVA_P–PRICE* association, the firms with

higher long-term unsecured borrowing show a positive influence on the market valuation of *FVA_P*. Thus, the findings are consistent across the price model and return model.

Table 3.7 about here

An alternative measure of the CLOSE firms

To test the robustness of the results for CLOSE firms, following previous studies (Aboody et al., 1999; Christensen & Nikolaev, 2013; Kallapur & Kwan, 2004), I divide the firms based on the sample's median *GEAR* and median *COVERAGE* ratios. *HIGH_GEAR* is an indicator variable equal to 1 if the *GEAR* is above the sample median, otherwise 0; and *LOW_COV* is an indicator variable equal to 1 if the *COVERAGE* is below sample median, otherwise 0. Table 3.8 reports the regression results. I find that investors' pricing of fair value adjustments is significantly lower among real estate firms with above-median gearing ratio (*HIGH_GEAR*×*FVA*= -0.421, t-stat=-3.993) and firms with below-median coverage for interest expenses (*LOW_COV*×*FVA*=-0.410; t-stat=-2.068). This is consistent with the previous results and provides further support for the discount on fair value adjustments of CLOSE firms.

Table 3.8 about here

I also re-run the value relevance tests using continuous *GEAR* variables. Table 3.9 presents the regression results. To correct for the correlated residuals, standard errors are clustered by firms. I report similar findings.

Table 3.9 about here

3.5.5 Additional analysis

Fair value adjustments around the violation year

To find if any of the real estate firms violated borrowing covenants during the sample period, I searched each annual report by manually using a series of keywords, e.g., "default", "violation", "breach", "renegotiation". I identify eight firm-year observations which mention borrowing covenant violation and renegotiation of the contract. Next, I try to observe if there is any pattern in the reporting of fair value adjustments for DEFAULT firms before the year of violation and in the year immediately following violation. I find that, out of the eight firms, in the year before the violation, six firms (75 percent), and after violation, four firms (50 percent), reported fair value adjustments upward. Interestingly, 75 percent of the violation firms either made no adjustments (4 out of 8) or made downward adjustments (2 out of 8) in the year of violation. Although this indicates managers are prone to avoiding covenant violation in the pre-violation year and taking a big bath in the violation year,[16] due to very small number of observations, it is difficult to any draw conclusion.

Table 3.10 about here

Influence of governance mechanism

The role of corporate governance is critical because it monitors the exercise of accounting discretion (Bowen et al., 2008; Kabir & Rahman, 2016), limits opportunistic behaviour by managers (Nazir & Afza, 2018), and increases the reliability of fair value estimates (Habib & Azim, 2008; Siekkinen, 2017; Song et al., 2010). The measurement uncertainty (i.e., intrinsic estimation error and management-induced error) involved in Level 3 fair value estimates often leads to

[16] Five out of eight firms reported a net loss in the year of violation.

investors raising questions about its faithful representation. The monitoring by the board of directors and audit committee is expected to restrain managers from making biased decisions in difficult situations and reduce measurement uncertainty, initiating increased trust in Level 3 fair value estimates and higher value relevance. For example, Song et al. (2010) find that as the strength of governance increases, investors' valuations of Level 3 fair value assets go up. Siekkinen (2017) reports board characteristics such as board independence and gender diversity are positively associated with the information quality of Level 3 estimates. In a similar vein, Huang et al. (2016) show that stronger corporate governance (i.e., board independence, specialist auditors, audit committee financial experts, and strong internal control) mitigates the positive relationship between Level 3 fair value assets and the cost of equity capital. As per Kanagaretnam et al. (2009) and Lee and Park (2013), the discretionary items of Big 4 clients have more information content in explaining stock returns relative to non-Big 4 clients. For Chinese companies, Hsu and Wu (2019) find that firms that recognise investment property at fair value experience an increase in crash risk, but this association is weaker if firms have strong corporate governance.

I extend the finding of a positive association between corporate governance and the informativeness of Level 3 fair value into the area of debt contracting reasons and examine whether the discount on Level 3 fair value adjustments among firms closer to violating borrowing covenants is contingent upon the governance strength of the real estate firm. Following prior studies, I focus on board characteristics (e.g., independence, real estate expertise, gender diversity, risk committee), audit committee characteristics (e.g., real estate expertise, accounting expertise, number of meetings) and auditor independence (Big 4) to construct the governance index (*CGI*). I take the governance score (*GVSCORE*) developed based on the principal component factor analysis of eight major board variables in section 3.5.2 and divide the entire

sample based on the median *GVSCORE*. Thus, *CGI* is a dummy variable that equals 1 if the *GVSCORE* is above the median score of 0.18 (stronger governance sub-sample) and 0 otherwise (weaker governance sub-sample). I then separately test model (3.2) for each sub-sample.

Table 3.11 Panel A shows the results of univariate analysis. I find that firms with stronger governance have a less volatile stock return, and larger market to book ratio and market value of equity. The weaker governance firms, on average, are more levered and have less coverage for interest expenses. Panel B presents the results of the regression. Model (1) shows that fair value adjustments are positively associated with the stock return, regardless of the strength of the governance, although the coefficient of the fair value adjustments from the stronger governance sub-sample is higher than the weaker governance sub-sample. Model (2) indicates that the implications of a decremental valuation due to high gear are significant only in the weaker governance sub-sample but not in the stronger governance sub-sample. However, neither of the sub-samples shows a significant influence of lower coverage. In model (3)-model (5), I observe that the investors' discount on fair value adjustments for firms with higher secured borrowing and higher long-term borrowing, and incremental valuation for firms with higher long-term-unsecured borrowing, hold in the weaker governance sub-sample, but not in the stronger governance sub-sample.

Table 3.11 about here

Overall, the results suggest that faithful representation concerns about Level 3 fair value adjustments due to closeness to borrowing covenant violation are more prominent in weaker monitoring environments.

3.6 Conclusion

This study examines the influence of concerns relating to borrowing covenant violations on the informativeness of Level 3 fair value adjustments using a sample of the Australian real estate firms from 2007 to 2019. I argue that investors' concerns about managerial bias in Level 3 fair value estimation is greater for firms that are closer to violating or have violated borrowing covenants than firms that are far from violation. Consistent with this, I find that although the fair value adjustments are priced positively overall, investors incrementally apply a valuation discount for firms closer to a violation or in technical default of their borrowing covenants. I also find that the discount effect changes across different borrowing categories, perhaps due to varying degrees of scrutiny by lending authorities. Investors appear to be more concerned about managerial bias in measuring Level 3 fair value estimates for higher secured borrowing and long-term borrowing sub-samples, while for firms with higher long-term unsecured borrowing, they perceive substantially lower information risk.

I also consider whether the discount on fair value adjustments due to closeness to a borrowing covenant violation is contingent upon the strength of corporate governance. Results evidence that the decremental valuation due to high gear is significant only in the weaker governance sub-sample. Furthermore, the investors' discount on fair value adjustments for firms with higher secured borrowing and higher long-term borrowing, and increased valuation for firms with higher long-term unsecured borrowing hold in the weaker governance sub-sample, but not in the stronger governance sub-sample. Consistent with prior studies (Huang et al., 2016; Siekkinen, 2017; Song et al., 2010), this suggests that governance strength can mitigate concerns around fair value adjustments arising due to the closeness to borrowing covenant violations in a real estate setting.

For investment properties, the issue of relevance and faithful representation of fair value is an ongoing debate. While the IASB mandates disclosure of the fair value of investment properties, US GAAP recommends the use of the cost model and restrict any upward adjustments fearing that mandating fair value would make financial statements subject to a high degree of managerial discretion and limit their relevance for decision-making. In this study, I provide evidence not only that changes in fair value of investment properties are value relevant, but also that the market can see through the differences in reliability and are not misled by the bias in managerial discretion. Findings in this study support the move toward the fair value reporting of the non-current asset class, which is as yet an open question for the FASB.

The results of this study are subject to the following limitations, indicating a need for future research. First, I concentrate on only two of the many possible borrowing covenants, i.e., gearing ratio and coverage ratio, to identify the firms at high risk of violation. I do not consider the loan to value ratio, use of which is almost as common as gearing. However, considering the extensive use of gearing and coverage ratio by prior research in testing the debt covenant hypothesis (DeFond & Jiambalvo, 1994; Duh et al., 2009; Shivakumar, 2013) and the non-availability of a clear definition of loan to value and other ratios, I limit the analysis to gearing and coverage. Second, to separate out firms that are close to covenant violation, while I apply the median of the industry thresholds for gearing and coverage ratio to the entire sample, I acknowledge that using actual covenant ratio thresholds and the proximity to violation of each firm would provide a more accurate division of sub-samples. However, limited disclosure on borrowing covenant-related information by the sample real estate firms prevented me from doing that. Future studies may consider exploring this in other settings. Third, because firms are not required to report a covenant violation if it has been 'cured' by the filing date, whereby the lender

has agreed to waive the violation or the lender and firm have renegotiated the agreement (Dyreng et al., 2020), the close to covenant violation and far from covenant violation sub-samples may include some violation observations for firms that did not report violation in their annual reports. Fourth, this study only addresses investors as financial statement users. It would be worthwhile for future research to focus on other stakeholders such as creditors or financial analysts. Finally, the results are based on an Australian real estate sample and might only be valid for this single industry and its regulatory environment.

Chapter 3 Tables

Table 3.1: Nature of borrowing arrangements in Australian real estate sector

Panel A: Borrowing types

	Secured Borrowing (%)	Unsecured Borrowing (%)	Total (%)
Long-term Borrowing (%)	70	30	82
Current Borrowing (%)	69	31	18
Total (%)	71	29	100

Panel B: Descriptive statistics for borrowing types and interest coverage

	N	Mean	SD	25th	50th	75th	Max
GEAR	444	0.325	0.165	0.230	0.315	0.425	0.989
SECURED	444	0.239	0.203	0.010	0.253	0.391	0.759
UNSECURED	444	0.083	0.125	0.000	0.000	0.193	0.434
LONG	444	0.263	0.152	0.157	0.262	0.358	0.654
CURRENT	444	0.060	0.129	0.000	0.004	0.049	0.687
LONG_SECURED	444	0.187	0.179	0.000	0.159	0.331	0.596
LONG_UNSECURED	444	0.075	0.115	0.000	0.000	0.172	0.404
COVERAGE	444	5.782	11.469	1.579	3.641	6.423	74.527

Panel C: Summary statistics for two major borrowing covenants disclosed in notes- by year

Year	No. of firms disclosing covenant info	Median no. of covenants disclosed	Gearing ratio		Interest coverage	
			n	Median	n	Median
2007	3	2	2	40%	0	-
2008	11	2	9	42.5%	5	2 times
2009	13	2	8	45%	10	1.75 times
2010	19	2	12	45%	16	1.75 times
2011	20	2	11	50%	15	1.75 times
2012	22	2	12	52.50%	18	1.75 times
2013	23	2	11	50%	17	1.85 times
2014	27	2	15	50%	21	2 times
2015	30	2	15	50%	24	2 times
2016	33	2	17	50%	28	2 times
2017	33	2	17	50%	25	2 times
2018	34	2	19	50%	28	2 times
2019	32	2	14	52.50%	22	2 times
Total	300	2	162	**50%**	229	**2** times

Note: Table 3.1 illustrates the nature of borrowing contracts in the Australian real estate sector. Panel A reports the percentage of the different borrowing categories relative to the total borrowing. Panel B provides the descriptive statistics of each borrowing type. Panel C summarises statistics for two major borrowing covenants, i.e., gearing ratio and interest coverage, as disclosed in the notes to the financial statement, by year. Variables are defined in Appendix A.

Table 3.2: Sample selection process

	Number of firms		Percentage of firms	
	Less	Remaining	Less (%)	Remaining (%)
ASX-listed real estate firms in Thomson Reuters Eikon as of 16 June 2019		78		100%
Excluding the firms:				
That did not adopt the recognition regime during the sample period	4	74	5%	95%
With no investment property assets from 2007 to 2019	20	54	26%	69%
Final sample				
Firms		54		69%
Firm-years (for 2007 to 2019)		444		

Table 3.3: Descriptive statistics: Return model

Panel A: Continuous variables

Variables	N	Mean	SD	Min	25th	50th	75th	Max
RETURN	444	0.091	0.299	-0.725	-0.034	0.111	0.246	1.107
NI	444	0.033	0.274	-1.327	0.010	0.058	0.083	1.614
ΔNI	444	-0.032	0.527	-3.807	-0.026	0.001	0.035	1.831
FVA	444	-0.003	0.279	-1.761	-0.001	0.028	0.070	0.664
VOLAT	444	0.073	0.076	0.000	0.034	0.049	0.073	0.445
MTB	444	1.344	1.691	-0.142	0.810	1.030	1.276	12.558
SIZE	444	19.904	2.178	11.149	18.875	20.084	21.281	25.235
INDEX	444	0.095	0.043	-0.023	0.092	0.103	0.118	0.166

Panel B: Dichotomous variables

Variables	Yes=1		No=0	
	N	n	%	n
CLOSE_GEAR	444	54	12%	390
CLOSE _COV	444	118	27%	326
HIGH_SECURED	444	223	50%	221
HIGH_UNSEC	444	222	50%	222
HIGH_LONG	444	224	50%	220
HIGH_CURRENT	444	225	51%	219
HIGH_LONG_SEC	444	223	50%	221
HIGH_LONG_UNSEC	444	207	47%	237
DEFAULT	444	8	2%	436
LOSS	444	77	17%	367

Panel C: Pearson correlation

Variables	*(1)*	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*	*(10)*	*(11)*	*(12)*	*(13)*	*(14)*	*(15)*
(1) RETURN	1														
(2) NI	0.184*	1													
(3) ΔNI	0.086	0.292*	1												
(4) FVA	0.236*	-0.035	0.080	1											
(5) VOLAT	-0.121*	-0.213*	0.040	-0.174*	1										
(6) MTB	-0.009	-0.043	0.013	0.149*	-0.071	1									
(7) SIZE	0.040	0.033	0.180*	0.264*	-0.381*	0.145*	1								
(8) LOSS	-0.292*	-0.356*	-0.210*	-0.402*	0.174*	-0.052	-0.299*	1							
(9) INDEX	0.351*	0.109*	0.078	0.238*	-0.198*	0.089	0.035	-0.310*	1						
(10) CLOSE_GEAR	-0.139*	-0.116*	-0.078	-0.151*	0.216*	0.043	-0.339*	0.175*	-0.097*	1					
(11) CLOSE_COV	-0.164*	-0.271*	-0.215*	-0.163*	0.181*	-0.135*	-0.415*	0.465*	-0.203*	0.291*	1				
(12) HIGH_SECURED	-0.089	-0.143*	-0.085	-0.028	0.176*	0.097*	-0.478*	0.123*	-0.065	0.329*	0.222*	1			
(13) HIGH_LONG	-0.025	-0.022	-0.008	0.122*	-0.032	0.156*	-0.124*	0.002	0.038	0.162*	0.117*	0.527*	1		
(14) DEFAULT	-0.139*	-0.054	-0.064	-0.067	0.132*	-0.015	-0.133*	0.162*	-0.136*	-0.050	-0.081	0.033	-0.103*	1	
(15) GVSCORE	0.042	0.083	0.050	0.024	-0.274*	0.124*	0.600*	-0.108*	0.039	-0.162*	-0.195*	-0.373*	-0.009	-0.170*	1
VIF		1.54	1.25	1.46	1.96	1.17	3.10	1.90	8.22	1.30	1.74	2.35	1.77	1.16	1.87

Note: * represents significance level at <0.05. Variables are defined in Appendix A.

Table 3.4: Descriptive statistics of corporate governance variables

Panel A: Descriptive statistics

Variable	N	Mean	SD
INDDIR	444	0.56	0.24
REXP_INDDIR	444	0.21	0.18
REXP_AUD	444	0.32	0.26
ACEXP	444	0.71	0.46
ACTIVITY	444	3.99	2.45
GENDER	444	0.14	0.14
RISK	444	0.61	0.49
BIG4	444	0.76	0.43

Panel B: Correlations

Variables	*(1)*	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*
(1) INDDIR	1							
(2) REXP_INDDIR	0.307*	1						
(3) REXP_AUD	0.101*	0.563*	1					
(4) ACEXP	0.132*	0.062	0.089	1				
(5) ACTIVITY	0.322*	0.282*	0.384*	0.243*	1			
(6) GENDER	0.253*	0.046	0.012	0.087	0.321*	1		
(7) RISK	0.322*	0.139*	0.147*	0.311*	0.474*	0.559*	1	
(8) BIG4	0.359*	0.125*	0.076	0.193*	0.236*	0.154*	0.341*	1

Panel C: Governance factor score analysis and sample adequacy

Variables	Factor Loading Coefficients	Kaiser-Meyer-Olkin Measure of Sampling Adequacy
INDDIR	0.17	0.71
REXP_INDDIR	0.17	0.59
REXP_AUD	0.16	0.56
ACEXP	0.08	0.73
ACTIVITY	0.23	0.79
GENDER	0.14	0.64
RISK	0.34	0.69
BIG4	0.12	0.76
Variation Explained	81%	Mean KMO= 0.68
Eigenvalue	2.08	

Panel D: Descriptive statistics of governance factor score

	GVSCORE
N	444
Median	0.18
SD	0.88
Min	-2.07
75^{th}	0.66
Max	2.51

Note: Table 3.4 reports the descriptive statistics for the governance variables and governance factor score. Panel A reports the descriptive statistics for eight board variables. Panel B reports the correlation matrix. * represents significance level at <0.05. Panel C reports the factor loading coefficients of the governance variables based on varimax orthogonal rotation. Panel D shows the distribution of *GVSCORE*. Variables are defined in Appendix A.

Table 3.5: Influence of investors' concerns about borrowing covenant violations on the market valuation of fair value adjustments

DEP=*RETURN*	Pred.	(1) Full Sample *(t-stat)*	(2) *CLOSE* *(t-stat)*	(3) *DEFAULT* *(t-stat)*	(4) Extended *(t-stat)*
Intercept		0.364*	0.473**	0.365*	0.502**
		(1.948)	(2.392)	(1.963)	(2.554)
NI		0.098*	0.172***	0.101*	0.178***
		(1.838)	(2.941)	(1.913)	(3.066)
ΔNI		0.006	0.006	0.005	0.005
		(0.236)	(0.239)	(0.204)	(0.211)
FVA	+	0.168***	0.461***	0.174***	0.515***
		(3.274)	(4.245)	(3.412)	(4.575)
CLOSE_GEAR			-0.058		-0.061
			(-1.407)		(-1.503)
CLOSE _GEAR× FVA	+/-		-0.233**		-0.223**
			(-2.165)		(-2.086)
CLOSE _COV			-0.008		-0.015
			(-0.222)		(-0.420)
CLOSE _COV× FVA	+/-		-0.225*		-0.285**
			(-1.835)		(-2.244)
DEFAULT				-0.266**	-0.275**
				(-2.489)	(-2.556)
DEFAULT× FVA	+/-			-0.703*	-0.977***
				(-1.963)	(-2.664)
VOLAT		-0.261	-0.301	-0.230	-0.273
		(-1.200)	(-1.392)	(-1.062)	(-1.271)
MTB		-0.001	-0.000	-0.001	0.000
		(-0.182)	(-0.044)	(-0.101)	(0.019)
SIZE		-0.015*	-0.020**	-0.014*	-0.020**
		(-1.808)	(-2.287)	(-1.696)	(-2.337)
LOSS		-0.147***	-0.132***	-0.139***	-0.122***
		(-3.543)	(-3.088)	(-3.353)	(-2.844)
INDEX		1.298	1.232	1.137	1.051
		(1.625)	(1.548)	(1.428)	(1.328)
GVSCORE		0.018	0.023	0.010	0.016
		(1.001)	(1.272)	(0.566)	(0.874)
Year fixed effects		Yes	Yes	Yes	Yes
N		444	444	444	444
Adjusted R^2		0.277	0.294	0.286	0.306
F-stat		9.493	8.675	9.051	8.521

Note: Column (1) reflects model (3.1). Column (2) includes an indicator variable representing firms at high risk of violating borrowing covenants, and Column (3) includes an indicator variable representing firms that violated covenants, relative to firms that are far from violation. Column (4) reflects model (3.2). *, ** and *** represent significance levels of 0.10, 0.05 and 0.01, respectively. Variables are defined in Appendix A.

Table 3.6: Influence of secured nature and maturity term of borrowing contracts on the market valuation of fair value adjustments

DEP=*RETURN*	Pred.	(1) *(t-stat)*	(2) *(t-stat)*	(3) *(t-stat)*
Intercept		0.668*** (3.215)	0.575*** (2.888)	0.431** (2.066)
NI		0.176*** (3.087)	0.123** (2.188)	0.098* (1.680)
ΔNI		0.010 (0.410)	-0.001 (-0.049)	-0.005 (-0.198)
FVA		0.616*** (5.269)	0.536*** (4.737)	0.385*** (3.278)
HIGH_SECURED		-0.049* (-1.721)		
HIGH_SECURED× FVA	+/-	-0.348*** (-2.987)		
HIGH_LONG			-0.027 (-1.050)	
HIGH_LONG×FVA	+/-		-0.243** (-2.565)	
HIGH_LONG_SECURED				-0.015 (-0.550)
HIGH_LONG_SECURED×FVA	+/-			-0.231** (-2.237)
HIGH_LONG_UNSEC				-0.027 (-0.882)
HIGH_LONG_UNSEC×FVA	+/-			0.523*** (3.191)
CLOSE _COV		-0.015 (-0.442)	-0.020 (-0.578)	-0.027 (-0.795)
CLOSE _COV×FVA		-0.221* (-1.674)	-0.295** (-2.362)	-0.163 (-1.225)
DEFAULT		-0.279*** (-2.616)	-0.290*** (-2.704)	-0.282*** (-2.649)
DEFAULT×FVA		-0.839** (-2.247)	-1.056*** (-2.878)	-0.867** (-2.370)
VOLAT		-0.295 (-1.390)	-0.248 (-1.159)	-0.273 (-1.282)
MTB		0.003 (0.388)	-0.000 (-0.061)	-0.000 (-0.045)
SIZE		-0.027*** (-2.944)	-0.024*** (-2.691)	-0.013 (-1.401)
LOSS		-0.132*** (-3.116)	-0.137*** (-3.194)	-0.126*** (-2.952)
INDEX		0.823 (1.051)	1.164 (1.474)	0.457 (0.574)
GVSCORE		0.015 (0.847)	0.022 (1.195)	0.015 (0.824)
Year fixed effects		Yes	Yes	Yes
N		444	444	444
Adjusted R^2		0.317	0.309	0.325
F-stat		8.899	8.611	8.606

Note: Table 3.6 presents the regression results for the influence of high-level secured and high-level long-term borrowings on the market valuation of fair value adjustments. Columns (1)-(3) include dummy variables for firms with above-median secured borrowings, above-median long-term borrowings and above-median long-term secured and unsecured borrowings, respectively. *, ** and *** represent significance levels of 0.10, 0.05 and 0.01, respectively. Variables are defined in Appendix A.

Table 3.7: Price model: Influence of investors' concerns about borrowing covenant violations on the market valuation of fair value adjustments

DEP= *PRICE*	(1) *(t-stat)*	(2) *(t-stat)*	(3) *(t-stat)*	(4) *(t-stat)*	(5) *(t-stat)*
Intercept	-0.228	0.674	0.610	0.291	0.389
	(-0.256)	(0.887)	(0.776)	(0.373)	(0.489)
NI_P	0.250	-0.114	-0.082	-0.215	-0.261
	(1.005)	(-0.527)	(-0.374)	(-0.935)	(-1.145)
FVA_P	0.281***	2.899***	1.794***	1.058***	1.018***
	(3.443)	(6.378)	(3.089)	(10.816)	(10.512)
CLOSE _GEAR		-0.831**			
		(-2.266)			
CLOSE_GEAR×FVA_P		-1.901***			
		(-4.172)			
CLOSE _COV		-1.037***	-1.237***	-1.333***	-1.225***
		(-3.784)	(-4.465)	(-4.829)	(-4.478)
CLOSE _COV×FVA_P		-0.986***	-1.016***	-0.632***	-0.662***
		(-10.558)	(-10.641)	(-2.895)	(-3.073)
DEFAULT		-1.167	-1.090	-1.112	-1.059
		(-1.325)	(-1.209)	(-1.232)	(-1.192)
DEFAULT×FVA_P		-2.869***	-1.016***	-1.025***	-0.666***
		(-6.153)	(-8.817)	(-8.912)	(-3.014)
HIGH_SECURED			-0.157		
			(-0.642)		
HIGH_SECURED×FVA_P			-0.740		
			(-1.275)		
HIGH_LONG				0.061	
				(0.265)	
HIGH_LONG×FVA_P				-0.386**	
				(-1.993)	
HIGH_LONG_SEC					0.251
					(1.041)
HIGH_LONG_SEC×FVA_P					-0.329*
					(-1.724)
HIGH_LONG_UNSEC					0.657**
					(2.562)
HIGH_LONG_UNSEC×FVA_P					1.305**
					(2.450)
TA_P	0.444***	0.514***	0.513***	0.510***	0.512***
	(14.093)	(18.553)	(18.022)	(17.433)	(18.069)
FVIP_P	0.045***	0.029***	0.030***	0.031***	0.030***
	(4.408)	(3.246)	(3.247)	(3.331)	(3.313)
TL_P	0.026***	0.009	0.008	0.011	0.010
	(2.717)	(1.018)	(0.874)	(1.243)	(1.158)
INDEX	33.149***	24.320***	26.975***	30.665***	24.241***
	(3.985)	(3.385)	(3.669)	(4.232)	(3.300)
GVSCORE	0.743***	0.608***	0.598***	0.652***	0.526***
	(5.098)	(4.760)	(4.323)	(5.023)	(3.845)
Year fixed effects	Yes	Yes	Yes	Yes	Yes
N	444	444	444	444	444
Adjusted R^2	0.905	0.933	0.930	0.930	0.932
F-stat	236.4	257.9	244.5	245.6	234.5

Note: Table 3.7 reports the regression results using the price model. Column (1) reflects the baseline model as presented in model (3.3). Columns (2)-(5) reflects model (3.4). *, ** and *** represent significance levels of 0.10, 0.05 and 0.01, respectively. Variables are defined in Appendix A.

Table 3.8: Alternative measure of CLOSE firms: Above (below) median gearing (interest coverage)

DEP=*RETURN*	(1) *(t-stat)*
Intercept	0.590***
	(2.967)
NI	0.180***
	(3.258)
ΔNI	0.007
	(0.278)
FVA	0.863***
	(4.627)
HIGH_GEAR	-0.036
	(-1.270)
HIGH_GEAR×FVA	-0.421***
	(-3.993)
LOW_COV	-0.015
	(-0.484)
LOW_COV× FVA	-0.410**
	(-2.068)
VOLAT	-0.271
	(-1.275)
MTB	0.004
	(0.513)
SIZE	-0.025***
	(-2.876)
LOSS	-0.127***
	(-3.105)
INDEX	1.154
	(1.480)
GVSCORE	0.028
	(1.615)
Year fixed effects	
N	444
Adjusted R^2	0.322
F-stat	9.776

Note: Table 3.8 reports the regression results based on an alternative measure of CLOSE firms. *, ** and *** represent significance levels of 0.10, 0.05 and 0.01, respectively. Variables are defined in Appendix A.

Table 3.9: Alternative measures: Influence of borrowing levels (as continuous variables) on the market valuation of fair value adjustments

DEP=*RETURN*	(1) *(t-stat)*	(2) *(t-stat)*	(3) *(t-stat)*	(4) *(t-stat)*
Intercept	0.533*** (2.747)	0.518** (2.544)	0.615** (2.644)	0.541** (2.546)
NI	0.199 (1.608)	0.064 (0.564)	0.165 (1.277)	0.061 (0.544)
ΔNI	0.017 (0.346)	-0.003 (-0.062)	0.012 (0.244)	-0.001 (-0.030)
FVA	0.607*** (2.818)	0.313*** (3.516)	0.522*** (2.865)	0.299*** (3.418)
GEAR	-0.181 (-1.566)			
GEAR×FVA	-0.878*** (-3.126)			
LONG		-0.103 (-1.093)		
LONG×FVA		-0.587*** (-3.565)		
SECURED			-0.160 (-1.539)	
SECURED×FVA			-0.748*** (-2.849)	
LONG_SECURED				-0.109 (-1.201)
LONG_SECURED×FVA				-0.612*** (-3.530)
LONG_UNSECURED				-0.096 (-0.703)
LONG_UNSECURED×FVA				1.232 (1.020)
COVERAGE	0.000 (0.152)	0.001 (0.998)	0.001 (0.871)	0.001 (1.246)
VOLAT	-0.292 (-0.924)	-0.272 (-0.834)	-0.329 (-1.010)	-0.290 (-0.882)
MTB	0.004 (0.593)	0.000 (0.062)	0.005 (0.675)	0.002 (0.372)
SIZE	-0.021** (-2.640)	-0.022** (-2.504)	-0.026** (-2.562)	-0.022** (-2.415)
LOSS	-0.128** (-2.206)	-0.160** (-2.604)	-0.136** (-2.261)	-0.157** (-2.543)
INDEX	1.300** (2.247)	1.486** (2.432)	1.139* (1.945)	1.001** (2.090)
GVSCORE	0.022 (1.529)	0.030* (1.718)	0.016 (1.152)	0.026 (1.480)
Year fixed effects	Yes	Yes	Yes	Yes
N	444	444	444	444
Adjusted R^2	0.317	0.288	0.305	0.291
F-stat	8.410	9.396	8.256	9.134

Note: Table 3.9 reports the regression results of continuous *GEAR* variables. To correct for the correlated residuals, standard errors are clustered by firms. *, ** and *** represent significance levels of 0.10, 0.05 and 0.01, respectively. Variables are defined in Appendix A.

Table 3.10: Table showing the direction of fair value adjustments (*FVA*) around the violation year

	Year prior to violation		Year of Violation		Year after violation	
Firms reporting net income	7		3		6	
Upward FVA	6		1		3	
Downward FVA	1		0		2	
No FVA	0		2		1	
Firms reporting net loss	1		5		2	
Upward FVA	0		1		1	
Downward FVA	1		2		0	
No FVA	0		2		1	
Total	8		8		8	
Upward FVA	6	75%	2	25%	4	50%
Downward FVA	2	25%	2	25%	2	25%
No FVA	0		4	50%	2	25%

Note: Table 3.10 shows the direction of fair value adjustments (*FVA*) around the violation year for eight firm-year observations that mention a borrowing covenant violation during the sample period.

Table 3.11: Influence of corporate governance

Panel A: Univariate analysis

Variables	*CGI=0*			*CGI=1*			Two sample t-test Mean (*CGI=0*)-Mean (*CGI=1*)		
	N	Mean	SD	N	Mean	SD	Diff.	t stat	p-value
RETURN	221	0.09	0.35	223	0.09	0.24	0.00	-0.08	0.94
NI	221	0.02	0.35	223	0.04	0.16	-0.02	-0.82	0.41
ΔNI	221	-0.06	0.71	223	0.00	0.23	-0.06	-1.27	0.21
FVA	221	-0.02	0.36	223	0.01	0.16	-0.03	-0.96	0.34
VOLAT	221	0.09	0.09	223	0.06	0.05	0.03	4.60	0.00
MTB	221	1.19	1.21	223	1.50	2.05	-0.31	-1.94	0.05
SIZE	221	18.65	1.97	223	21.15	1.58	-2.50	-14.71	0.00
GEAR	221	0.36	0.18	223	0.29	0.14	0.06	4.02	0.00
COVERAGE	221	4.93	10.74	223	6.63	12.12	-1.70	-1.57	0.12

Panel B: Results of regression analysis based on sub-sample of real estate firms with stronger versus weaker governance

	Model (1)		Model (2)		Model (3)		Model (4)		Model (5)	
DEP=*RETURN*	*CGI*=1 *(t-stat)*	*CGI*=0 *(t-stat)*	*CGI*=1 *(t-stat)*	*CGI*=0 *(t-stat)*	*CGI*=1 *(t-stat)*	*CGI*=1 *(t-stat)*	*CGI*=1 *(t-stat)*	*CGI*=0 *(t-stat)*	*CGI*=1 *(t-stat)*	*CGI*=0 *(t-stat)*
Intercept	0.172	0.295	0.211	0.691**	0.209	0.736**	0.162	0.566*	0.093	0.394
	(0.923)	(0.943)	(1.044)	(2.063)	(0.918)	(2.173)	(0.790)	(1.693)	(0.389)	(1.188)
NI	0.902***	0.017	0.829***	0.138*	0.812***	0.126	0.855***	0.047	0.855***	0.007
	(6.199)	(0.240)	(4.938)	(1.727)	(4.759)	(1.517)	(5.189)	(0.637)	(5.073)	(0.095)
ΔNI	-0.364***	0.029	-0.363***	0.034	-0.365***	0.026	-0.367***	0.009	-0.371***	0.008
	(-5.152)	(0.865)	(-4.933)	(0.997)	(-4.949)	(0.754)	(-4.956)	(0.259)	(-4.993)	(0.244)
FVA	0.480***	0.157**	0.429	0.902***	0.378	0.943***	0.387	0.842***	0.461	0.328
	(3.390)	(2.271)	(1.629)	(3.204)	(1.440)	(3.288)	(1.442)	(2.948)	(1.357)	(1.054)
HIGH_GEAR			-0.022	-0.038						
			(-0.735)	(-0.784)						
HIGH _GEAR×FVA			-0.256	-0.484***						
			(-1.345)	(-3.066)						
LOW _COV			0.004	-0.043	-0.006	-0.050	-0.009	-0.057	-0.012	-0.088*
			(0.143)	(-0.782)	(-0.193)	(-0.937)	(-0.290)	(-1.019)	(-0.385)	(-1.657)
LOW _COV×FVA			0.200	-0.425	0.231	-0.501*	0.179	-0.623**	0.200	-0.109
			(0.752)	(-1.417)	(0.858)	(-1.692)	(0.677)	(-2.105)	(0.741)	(-0.347)
HIGH_SECURED					-0.000	-0.055				
					(-0.011)	(-1.152)				
HIGH_SECURED×FVA					-0.256	-0.436**				
					(-1.314)	(-2.581)				
HIGH_LONG							0.012	-0.020		
							(0.436)	(-0.444)		
HIGH_LONG×FVA							-0.155	-0.209*		
							(-0.859)	(-1.672)		
HIGH_LONG_SEC									0.033	-0.009
									(0.996)	(-0.214)
HIGH_LONG_SEC×FVA									-0.258	-0.279**
									(-0.967)	(-2.367)
HIGH_LONG_SEC									0.006	-0.090*
									(0.177)	(-1.654)
HIGH_LONG_UNSEC×FVA									-0.135	1.167***

									(-0.493)	(3.632)
VOLAT	-0.456	-0.294	-0.579	-0.286	-0.599	-0.293	-0.528	-0.245	-0.483	-0.250
	(-1.192)	(-0.959)	(-1.448)	(-0.965)	(-1.486)	(-0.989)	(-1.318)	(-0.815)	(-1.177)	(-0.849)
MTB	0.003	-0.010	0.003	-0.002	0.003	0.000	0.002	-0.006	0.001	-0.010
	(0.484)	(-0.556)	(0.534)	(-0.101)	(0.421)	(0.014)	(0.351)	(-0.343)	(0.209)	(-0.582)
SIZE	-0.003	-0.016	-0.005	-0.033**	-0.004	-0.035**	-0.003	-0.028*	-0.000	-0.010
	(-0.422)	(-1.138)	(-0.622)	(-2.230)	(-0.456)	(-2.333)	(-0.332)	(-1.880)	(-0.043)	(-0.666)
LOSS	0.074	-0.266***	0.068	-0.245***	0.065	-0.258***	0.072	-0.245***	0.078	-0.236***
	(1.394)	(-4.002)	(1.260)	(-3.670)	(1.188)	(-3.813)	(1.340)	(-3.580)	(1.393)	(-3.553)
INDEX	0.283	2.076	0.573	1.526	0.328	1.511	0.384	1.852	0.460	0.292
	(0.378)	(1.482)	(0.742)	(1.125)	(0.432)	(1.109)	(0.501)	(1.344)	(0.591)	(0.211)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	223	221	223	221	223	221	223	221	223	221
Adjusted R^2	0.514	0.218	0.511	0.275	0.509	0.271	0.507	0.250	0.504	0.301
F-stat	13.35	4.221	11.09	4.632	11.00	4.549	10.91	4.186	10.02	4.796

Note: Table 3.11 reports the test results for the role of the strength of the governance system. Panel A shows the univariate analysis, and Panel B presents the results of the regression. *, ** and *** represent significance levels of 0.10, 0.05 and 0.01, respectively. Variables are defined in Appendix A.

CHAPTER FOUR:

DOES AUDITOR FAIR VALUE EXPERTISE AFFECT THE PERCEIVED REPORTING QUALITY OF FAIR VALUE ADJUSTMENTS?

4.1 Introduction

In this chapter, I examine whether auditors' fair value expertise affects investors' perceptions of the reporting quality of fair value adjustments to Level 3 investment properties. The ongoing concerns about the deficiencies in the auditing process of fair values (Cannon & Bedard, 2017), the recent claims that the engagement of Big 4 firms does not necessarily indicate high-quality fair value disclosures (ASIC, 2019; Griffith et al., 2015), and the growing discussion on the importance of auditors' task-specific experience (Ahn et al., 2020) motivated the research question. I specifically focus on the changes in investment property valuations because IAS 40 allows managers to report unrealised gains and losses through net income (IAS 40.35), which is permitted for only a few asset classes by the IFRS.

Level 3 fair value estimates are subject to high measurement uncertainty because they largely rely on managers' forward-looking assumptions (Song et al., 2010), which are complex and difficult for auditors to verify. The estimation risk is even higher for changes to Level 3 estimates, as they likely reflect the impact of changing economic conditions and managers' private information (Linsmeier, 2011). The auditing of Level 3 fair value estimates is challenging as it involves the evaluation of multiple models with numerous subjective inputs, lacks a definite task structure and takes place under uncertain environmental factors (e.g., market volatility)

(Bratten et al., 2013). Inspection reports by the PCAOB (2014) repeatedly identify the auditing of fair value estimates as one of the high-risk areas and indicate several deficiencies in the auditing process.

Previous empirical research provides evidence that Big 4 auditors minimise information risk and contribute towards the higher value relevance of fair values (Kanagaretnam et al., 2009; Lee & Park, 2013). However, in an experimental setting, Griffith et al. (2015) reveal confession by the Big 6 auditors that they often fail to adequately understand the assumptions in the estimation and overlook conflicting evidence that contradicts management's assumptions. ASIC (2019) also reports failures by the Big 4 audit firms to perform sufficient verification in support of their opinion.[17] In this study, I argue that engaging Big 4 audit firms may no longer be a sufficient criterion to assure the information quality of fair value estimates; rather, it is the task-specific expertise of the auditors that enhances reporting credibility of fair value information.

A recent study by Ahn et al. (2020) highlights the importance of auditors' task-specific experience by showing that greater fair value expertise enhances auditor performance and ensures audit quality. Not surprisingly, efficient verification of fair values requires training and practice, instruction, experience, and feedback, which can be obtained only through work experience (Bratten et al., 2013). For non-financial assets, the role of auditor fair value expertise could be more pronounced because of the illiquid tangible nature of the assets and the need to comprehend asset use and industry norms in evaluating the quality of disclosures. Being the most controversial asset group adopting the fair value regime (Christensen & Nikolaev, 2013) and because there are relatively few studies addressing auditors' role as

[17] Adverse findings are: for KPMG, 33 percent; for Deloitte, 32 percent; for EY, 22 percent; and for PwC, 18 percent (ASIC 2019, p. 7).

monitors, the context of 'non-current assets' has been of interest to academics, practitioners and regulators. Thereby, this study examines: do investors consider auditors' fair value expertise relevant while evaluating the reporting quality of changes in the fair value estimates of investment properties? I use two established proxies of audit quality to capture auditor fair value expertise: (i) experience gained through engagement tenure; and (ii) knowledge obtained through industry specialisation. Fair value expertise is measured at both the firm level and the partner level.

I use the context of Australian real estate firms to examine the research question. The real estate setting is unique because Level 3 investment properties constitute a significant proportion of the total assets, adjustments made to the valuations per annum are material and directly affect net income, and property valuation appears as a key audit matter in the audit reports every year. This means that fair value adjustments are highly important to capital market participants in a real estate setting. The Australian setting is perhaps more interesting because more than 75 percent of real estate firms are audited by the Big 4 auditors, implying that engaging one of the Big 4 is less likely to generate any competitive advantage. Another distinguishing feature is that Australia allowed the revaluation of properties long before the adoption of IFRS, indicating that measurement errors are less likely due to long managerial experience with property valuations. Thereby, it is unclear how the auditor expertise could contribute further to the relevance and representational faithfulness of fair value estimates. Furthermore, the statutory requirement of revealing both the signing partners' and the firm's names in the audit

report in Australia[18] allows the audit partner tenure to be identified, which is not available in many other settings.

This study extends Ahn et al.'s (2020) findings in two ways. First, Ahn et al. (2020) measure auditor fair value expertise in terms of exposure to auditing Level 2 and Level 3 fair value assets and liabilities at the city level and national level and document the increased value relevance of fair value disclosure for the city level audit experts on Level 3 fair values. In this study, I argue that expertise on Level 3 fair values can be gained not only through industry exposure but also by maintaining a sustainable engagement with the client firm (i.e., tenure). Second, I consider that partners' incentives and expertise may differ from those of the firms (Chen et al., 2008), and thus I develop the measures of auditor tenure and industry specialisation using data at the firm level and partner level. Finally, the setting researched by Ahn et al. (2020) differs considerably from this setting. Since US GAAP does not permit upward adjustments to non-financial assets, their findings provide no indication of the implication of auditor expertise for asset classes other than financial assets. In contrast, I focus on fair value estimates of the non-current asset group, i.e., investment properties.

The findings indicate that for both audit firms and audit partners, investors value fair value expertise gained through engagement years. I document that investors perceive the reporting quality of fair value adjustments is higher for the medium-tenure audit firm than the short-tenure firm, and for longer-tenure firms, the moderating influence is not significant, which partially evidences a non-linear association between audit firm tenure and reporting quality (Hohenfels, 2016; Johnson et al., 2002). However, in additional analysis, focusing specifically on the

[18] There has been a statutory requirement for the auditor of listed Australian companies to sign the audit report in their name and the name of the audit firm since the 1970s (section 324(10) of the Australian Corporation Act).

upward fair value adjustments, I find that both medium and long tenure positively influence investors' evaluation of unrealised gains. This suggests that audit firm tenure is beneficial in settings where faithful representation concerns are high and client-specific knowledge is of great importance. At the partner level, results show that investors' valuation of fair value adjustments is significantly higher after the first two years of partner appointment. This further supports the 'expertise' notion that the information quality of fair value adjustments is lower at the initial stage because of the lack of client-specific knowledge and increases as the partner gains more experience in verifying fair values. When I jointly incorporate both tenure levels into the model, I find that the moderating role of the medium-tenured firm is stronger than the above-median partner tenure. Additional analysis shows that the rotation of audit partners within the same firm decreases the information value of fair value adjustments. Thus, contrary to Chi and Huang's (2005) argument that the learning experience effectively ends when there is a change in audit firm but not when the audit partners rotate, I show that the switching of partners matters and the limited client-specific fair value expertise due to partner change negatively influences investors' evaluation of fair value adjustments.

However, I do not find an incremental valuation effect in engaging industry leaders at the firm and partner level. Contrary to Ahn et al. (2020), I find that neither the audit firm specialist at the office level nor the specialist at the national level influences investors' perceptions of the quality of fair value adjustments significantly in a real estate setting. I interpret this as an indication that, for non-current assets, client-specific knowledge is perhaps more important in enhancing the reporting credibility of fair value adjustments. Audit firms having medium-to-long tenure and partners engaging for a relatively longer-term are likely to have fair value expertise

and client-specific knowledge, while industry specialists have fair value expertise but may not necessarily have client-specific knowledge.

These findings have implications for researchers, practitioners, regulators and investors. First, I add to the growing body of literature on the value relevance of Level 3 fair value measurements (Ayres, 2016; Bagna et al., 2015; Goh et al., 2015; Song et al., 2010), specifically for non-current assets (Aboody et al., 1999; Gonçalves et al., 2017; Huffman, 2018), and the literature on how auditor task-specific expertise influences the perceived fair value reporting quality (Ahn et al., 2020; Bratten et al., 2013; Kanagaretnam et al., 2009). Despite the growing use of Level 3 fair values to report non-current assets (Christensen & Nikolaev, 2013) and evidence suggesting that managerial motives often drive discretionary choices (Brown et al., 1992; Whittred & Chan, 1992), little is known about what features of monitoring might be relevant to investors' decision-making. While extant fair value studies predominantly concentrate on the role of board characteristics (Huang et al., 2016; Siekkinen, 2017; Song et al., 2010) and the engagement of Big 4 auditors (Kanagaretnam et al., 2009; Lee & Park, 2013), I examine auditor tenure and industry specialisation through the lens of learning experience and expertise development.

Second, I extend the literature on the role of auditor tenure (Boone et al., 2008; Ghosh & Moon, 2005; Hohenfels, 2016). The primary findings that the non-linear effect of firm tenure on reporting quality persists for fair value estimates indicate a practical value of 10-year restriction imposed by EU regulation. However, with more complex upward adjustments, I show that such a policy initiative could generate unintended market consequences. Since unrealised gains are prone to managerial bias but are reported frequently, investors may think that tenure enables audit firms to gather the requisite expertise to carry out high-quality audits. Thus, I

suggest that audit firm tenure could be beneficial in cases where reliability concerns are high.

Third, the results emphasise the importance of "expertise" at the partner level in the verification of fair value measurements by showing that investors account for the time it takes for a new partner to develop client-specific knowledge. There is an ongoing policy debate on mandating the partner's signature in the audit report. The new PCAOB rule requires disclosure of the engagement partner's identity, on the basis that it would provide useful information to investors and other users. Supporting this, I provide evidence that the disclosure of auditor signature might facilitate the inference of their industry expertise by capital market participants and the reduction of agency costs.

Finally, I document that, unlike the banking sector (Bratten et al., 2020; Kanagaretnam et al., 2009), in a real estate setting, industry specialist auditors' role can have limited impact in addressing reliability concerns associated with fair value measurements. The findings in additional analysis that engaging Big 4 audit firms has no incremental valuation effect support the argument that investors in the real estate sector in Australia look beyond the mere appointment of Big 4 auditors in judging the informational value of Level 3 fair value changes to properties, and rely on an auditor's client-specific knowledge and expertise obtained through sustained engagement.

The remainder of this study proceeds as follows. Section 4.2 discusses the sample justification of the study. Section 4.3 reviews the literature and provides the basis for the empirical predictions of the study. Section 4.4 describes the research design and empirical models. Section 4.5 presents the data and results, and Section 4.6 makes concluding remarks.

4.2 Sample Justification

Due to some of its distinctive features, the real estate industry provides a unique context in which to study the role of auditor expertise on the perceived reporting quality of fair value adjustments. First, investment properties constitute a relatively significant proportion of total assets, and the prices of the properties are not directly observable (i.e., Level 3 fair values). On average, investment properties represents 72 percent of the total assets in this sample, mostly valued using Level 3 estimates. Adjustments made to the valuations per annum are significant, on average constituting 33 percent of the earnings before tax. Given the complexity of the measurement environment, the material size of the underlying assets, and reporting through net income, fair value adjustments are expected to be highly important to capital market participants in this setting.

Second, the valuation of investment property is a key audit matter, i.e., an area where there might be a higher risk of material misstatement in the audit reports of almost every real estate firm (EY, 2019, p. 22). Auditing fair value estimates is challenging (Bratten et al., 2013). Valuation models vary across different property classes, lack verifiable data, and are inherently complex, requiring the auditors to evaluate numerous cues for each estimate within uncertain environmental factors (Cannon & Bedard, 2017). EY (2019) shows that 60 percent of the real estate firms use more than one valuation technique[19] and disclose up to seven different types of model inputs.[20] The ability to effectively audit these models and assumptions requires expertise related to accounting, finance and economics (Bratten et al., 2013). Therefore, the fair value expertise of the audit firm might provide a competitive

[19] The discounted cashflow method is applied by most entities (81%), followed by income capitalisation and the direct market comparison method (EY, 2019, p. 7).

[20] Most widely used model inputs for real estate firms include discount rate (74%), net rent per square metre (53%), exit yield (49%), rental income (42%), rent growth (42%) and so on (EY, 2019, p. 8).

advantage and impact the quality of audit services, the extent of fair value disclosures, and the information risk associated with it (Ahn et al., 2020; Boone et al., 2008; Bratten et al., 2013).

Third, prior studies provide evidence that investors consider fair value estimates to be more reliable when the firm makes extensive disclosures (Laux & Leuz, 2009) and uses external valuation services (Kolev, 2019). The measurement-related disclosures for investment property have been extensive since the adoption of IFRS 13 in 2013, and the majority of real estate firms use external valuers in the valuation process along with their managers.[21] Thus, this setting permits me to investigate to what extent auditor expertise is relevant to pricing decisions of accounting estimates when measurement-related disclosures are detailed, and independent valuers are involved in the valuation process.

4.3 Prior Research and Development of Hypotheses

4.3.1 Informativeness of Level 3 fair values and the role of monitoring

IFRS 13 provides a three-level hierarchy (i.e., Level 1, Level 2 and Level 3) for the measurement of fair values and requires management to disclose the valuation levels of fair value assets and liabilities within that hierarchy (IASB, 2011). The information risk is lower for Level 1 and Level 2 fair values, and investors consider them relevant and reliable for pricing decisions (Goh et al., 2015; Kolev, 2019; Song et al., 2010). However, Level 3 fair value estimates involve high measurement uncertainty as they rely on managerial discretion, use subjective and forward-looking assumptions, and are difficult to verify (Bratten et al., 2013). They may also contain measurement

[21] While the managers update the valuation on a regular basis, independent valuers appraise the value periodically, with the period not exceeding three years (source: observation in notes to financial statements of Australian real estate firms).

errors and induce managerial bias (Landsman, 2007; Penman, 2007). Evidence on the informativeness of Level 3 fair value estimates is inconclusive (Ayres, 2016; Kolev, 2019). While Song et al. (2010) document that Level 3 estimates were priced at a discount relative to Level 1 and Level 2 fair values during the financial crisis of 2008, Goh et al. (2015) show that the discount is no longer significant when the market conditions stabilise.

Studies show that faithful representational concerns about Level 3 fair values can be remedied by effective monitoring mechanisms (i.e., internal or external). The role of governance is critical because it monitors the exercise of accounting discretion (Bowen et al., 2008; Kabir & Rahman, 2016) and limits opportunism (Nazir & Afza, 2018). Extant studies document that stronger governance mitigates information asymmetry and increases the value relevance of Level 3 fair value assets (Song et al., 2010). Siekkinen (2017) report board characteristics such as board independence and gender diversity are positively associated with the information quality of Level 3 estimates. Huang et al. (2016) document the effective role of board independence, auditor specialists, audit committee financial experts, and strong internal control in weakening the positive association between Level 3 fair value assets and the cost of equity capital.

Regarding the auditors' role, past research provides evidence of Big 4 and industry specialist auditors ensuring higher audit quality (Balsam et al., 2003; Becker et al., 1998) and contributing towards the higher value relevance of fair value measurements. Kanagaretnam et al. (2009) examine the impact of auditor reputation on the market valuation of banks' loan loss provisions, and Lee and Park (2013) examine whether the pricing of other comprehensive income reflects the differences in audit quality, measured by Big 4 versus non-Big 4 audit firm engagement. Both

studies use the banking context and find superior informativeness of discretionary amounts in the presence of higher audit quality.

In a real estate setting, effective monitoring and higher quality audit service are crucial to maintaining systemic confidence in the credibility of earnings due to the material size of complex Level 3 estimates and fair value adjustments reported through income. Despite the critical influence of the auditor's task-specific expertise on the audit quality of fair value measurements (Ahn et al., 2020), there has been little attempt to examine the extent to which such expertise affects investors' perceptions of the quality of fair value information, especially for non-current assets and in a setting where the measurement uncertainty is extensive, task complexity is high, and client-specific expertise and experience are likely to provide a competitive edge to the auditor's services.

4.3.2 Auditor tenure and the market's assessment of the quality of fair value adjustments

Organisation theory posits that the length of association between two entities indicates the extent of relationship-specific investments in the knowledge necessary to maintain a sustained relationship (Seabright et al., 1992). Every audit engagement requires audit firms to make client-specific investments, e.g., developing human capital, skills, and resources, enhancing expertise by training, formalising procedures or knowledge bases to facilitate the audit process and improve the quality of work (Levinthal & Fichman, 1988). If the task complexity is high, audit firms make more investments over time to comprehend the industry and gather knowledge about the clients (Bratten et al., 2019). Past research on audit expertise suggests that auditors' performance is related to the years of experience (Frederick & Libby, 1986) and that their expertise is strongly linked to the deep knowledge of clients obtained through the ongoing client- or industry-specific experience (Arrunada & Paz-Ares, 1997;

Bonner & Lewis, 1990). A longer tenure not only reduces information asymmetry between clients and auditors (Almutairi et al., 2009) but also enhances the ability to detect fraudulent financial reporting (Carcello & Nagy, 2004; Geiger & Raghunandan, 2002). Motivated by organisation theory, I argue that auditors' fair value expertise increases as the auditors' client-specific knowledge grows over time through the interactions with the client in a sustained relationship.

Audit quality literature suggests that reporting quality is lower during the early years of tenure due to the limited familiarity with client-specific issues, and that quality enhances with audit tenure (Geiger & Raghunandan, 2002; Myers et al., 2003; Stanley & DeZoort, 2007). For example, Chu et al. (2018) feature downward biases in reported earnings as a measure of reporting quality and document a positive association between audit tenure and reporting quality. However, the positive association between auditor tenure and audit quality does not remain linear indefinitely. Over an extended period, auditors develop learned confidence in the client, leading to a reduced scepticism about accounting estimates, which threatens auditor independence and lowers the audit quality (Johnson et al., 2002). More recent studies consider the possibility of the non-linearity of the auditor tenure and reporting quality association (Boone et al., 2008) and provide evidence of lower reporting quality in the initial and later years of engagement (Davis et al., 2007). For example, Johnson et al. (2002) find lower-quality financial reports during short tenures relative to medium-tenures and no significant influence of longer tenures.

Empirical studies that consider the non-linear association are limited and fail to provide consistent findings as to the length of the tenure after which users perceive impaired auditor independence. Boone et al. (2008) find that the cost of equity decreases in the early years of tenure but increases with additional years past 13 years of tenure. In an experimental setting, Knapp (1991) finds that experienced audit

committee members perceive that the likelihood of detecting errors is higher for auditors with a five-year tenure than auditors in their first years or with a tenure of 20 years. Hohenfels (2016) documents that investors perceive lower earnings quality during the early and later years of an auditor–client relationship, with earnings quality being highest when auditor tenure is eight to nine years, and lower during the first three years of an engagement and when auditor tenure is longer than 10 years.

Yet, it is unclear whether the perceived non-linear influence of audit firm tenure on reporting quality generalises to the real estate sector. In a real estate setting, auditors' client-specific knowledge is critical since the auditing process involves verifying large-sized Level 3 properties and questioning the validity of the assumptions applied in the models used to drive those fair values. In particular, evaluating the capitalisation rates and discount rates for multiple properties is problematic, given the market evidence is limited and property valuations are highly sensitive to even small movements. Auditors are required to develop an advanced understanding of valuation models and awareness of the industry practice for specific asset-classes to compare the alternatives and justify why an approach is preferable over another. The assessment of the external valuer's competency and capabilities, ensuring the consistency of the valuation inputs and the integrity of the software used to perform internal tolerance checks, and an understanding of changing environmental conditions are also essential, among other things, to achieve audit effectiveness. Bratten et al. (2019) argue that audit firm tenure is beneficial in settings where client-specific knowledge is highly important and these authors provide evidence that longer tenure improves the quality of financial reporting. Thus, one plausible argument is that a long-tenured auditor would be better positioned to understand, analyse, and plan the audit considering the environmental conditions and real estate performance changes. By contrast, the potential for independence

impairment and diminishing objectivity might come to dominate investors' perceptions and result in a declining or insignificant role of engagement tenure beyond an extended term.

Given the conflicting theoretical arguments, the lack of market-based evidence in settings involving Level 3 fair values, and the lack of reliable guidance on the length of tenure up to which the perceived quality increases and then begins to impair, I present the hypothesis in null form:

$\boldsymbol{H_{4.1a}}$**:** *The difference in the length of the audit firm–client relationship does not moderate the stock market valuation of fair value adjustments to the investment properties.*

Since audit partners' incentives and expertise differ from those of the firms (Chen et al., 2008) and investors' perceptions of fair value adjustments quality could vary between firm and partner, I extend the level of analysis to the partner level to get a better understanding (DeFond & Francis, 2005). Goodwin and Wu (2014) suggest that industry expertise is quite individual-specific as it takes time for partners to gain knowledge and build expertise from on-the-job experience. A new engagement partner possesses a lower level of client-specific knowledge and is likely to rely overly on information provided by management (Knapp, 1991). Singh et al. (2019) and Chen et al. (2008) show a negative association between the length of partner tenure and earnings management, indicating that earnings quality increases with audit partner tenure. Chen et al. (2016) provide evidence that firms with a long auditor tenure have a lower incidence of internal control problems. Thus, audit partner expertise and audit quality might be tied to the length of experience with individual clients.

On the other hand, a new audit partner could be more independent, bring a fresh perspective and help identify issues overlooked in previous audits (Daugherty

et al., 2012; Francis, 2004). Based on a sample of Australian firms, Fargher et al. (2008) find that audit partner rotation increases audit quality by better limiting client managers' accounting discretion. Similarly, Carey and Simnett (2006) document a deterioration in audit quality with long audit partner tenure. In Australia, there is a statutory requirement for audit partner rotation after every five years, effective since 2006. The belief is that a sufficiently high level of audit quality is achieved up to the recommended rotation, and beyond that a continued engagement would impede the partner's independence and capacity for critical evaluation (Carey & Simnett, 2006).

Although the client-specific experience of audit partners in verifying fair value estimates is crucial to develop expertise, there is a paucity of market-based evidence on whether and to what extent engagement tenure moderates the perception of fair value quality. Hence, I do not predict any specific association and test the following hypothesis:

$\boldsymbol{H_{4.1b}}$***:*** *The difference in the length of the audit partner–client relationship does not moderate the stock market valuation of fair value adjustments to the investment properties.*

4.3.3 Auditor industry specialisation and the market's assessment of the quality of fair value adjustments

Previous research on auditor expertise has predominantly focused on auditor specialisation within the industry and concludes that industry specialist auditors deliver high-quality audits due to greater competencies and in-depth understanding of financial reporting issues (Dunn & Mayhew, 2004; Reichelt & Wang, 2010). Authors typically argue that experience from auditing multiple clients in the same industry leads to the development of personnel with the requisite training and the accumulation of industry knowledge databases that auditors can access to provide better judgments (Solomon et al., 1999). Also, auditors can better detect errors when

they work within their industry specialisation (Owhoso et al., 2002). Consistent with this view, Gramling and Stone (2001) show that the earnings of clients of specialist auditors predict future cash flows more accurately than those of non-specialist auditors. Dunn and Mayhew (2004) find that firms audited by industry specialists are ranked higher in disclosure quality by financial analysts than clients of non-specialists. Thus, the engagement of industry specialists ensures higher audit quality.

A growing literature provides evidence that investors value auditors' competencies and expertise, and think that audit quality is higher if industry specialist auditors are involved. The majority of these studies focus on earnings as a proxy to capture reporting quality and document that industry specialisation is associated with greater audit assurance and higher value relevance of earnings (Balsam et al., 2003; Krishnan, 2003; Teoh & Wong, 1993). Only a few studies consider the moderating role of auditor specialisation in the context of fair value estimates. Kanagaretnam et al. (2009) separate the Big N auditors and industry specialist auditors, and show that only industry expertise has a significant impact on the market valuation of discretionary loan loss provision. Ahn et al. (2020) provide evidence that auditor task-specific fair value expertise contributes to higher audit quality, and the credibility and usefulness of fair value disclosures.

However, the involvement of industry leader audit firms may not necessarily mean high-quality audit services in practice. Regardless of the measures, the industry specialist auditors in this study belong to the Big 4 group, and recent experimental studies document that the audit process of fair value estimates by Big 4 audit firms is deficient. Based on interviews at Big 6 audit firms, Griffith et al. (2015) reveal an overreliance by auditors on assumptions and test models generated by managers and raise concerns that management can lead auditors 'down the garden path'. This is consistent with the concerns raised by the PCAOB (2014) and ASIC (2019). Auditors

further admit that often they "fail to adequately test assumptions and data underlying the estimation model, fail to consider controls over management process and the data, and fail to fully understand the model" (p. 835). To overcome the expertise auditors lack, audit firms can involve valuation specialists in the audit process. However, instead of using specialists' insights, auditors often try to fit specialists' work to their view, edit their work and ignore specialist-identified issues (Griffith, 2020).

Two other factors may further work against finding a differential impact of industry expertise. First, real estate firms make extensive measurement-related disclosures for investment property since adopting IFRS 13 in 2013. Comprehensive measurement-related disclosures are likely to decrease information asymmetry and moral hazard problems between firm insiders and outsiders (Healy et al., 1999; Leuz & Verrecchia, 2000; Verrecchia, 2001). Second, even though IAS 40 allows valuation by managers or independent valuers (IAS 40:33), most real estate firms use a combination of directors and independent valuers (EY, 2019). Dietrich et al. (2000) find that appraisals of investment properties by external valuers ensure a comparatively higher reliability of accounting estimates, i.e., less conservative bias, greater accuracy, and less managerial manipulation. Thus, given the detailed disclosures on fair values along with the engagement of external valuers in the valuation process, one can argue that auditor industry specialisation is at best of second-order importance to the investors and may not have a significant moderating influence on the market valuation of fair value adjustments.

Given the arguments on both sides and the lack of market-based evidence in a real estate setting, the industry experts' effect on investors' perceptions of fair value adjustments is not immediately clear. Hence, I state the next hypothesis in null form:

$H_{4.2}$: *Industry specialist auditors do not moderate the positive association between fair value adjustments to the investment properties and stock returns.*

Past research on industry specialisation shows that auditors can specialise at the national level or office level (Craswell et al., 1995; Fung et al., 2012; Li et al., 2010). National level expertise could be highly important because firms auditing a larger number of clients with dynamic fair value estimation needs are likely to invest in advanced training and audit technology, grow greater fair value expertise, and enjoy more benefits from economies of scale in fair value measurement verification. However, it is plausible that there is very little or no difference in audit quality at the national level, given most audit firms have multiple clients with fair value assets and make investments in similar resources (Ahn et al., 2020). More recent studies argue that industry expertise is an office-level phenomenon (Audousset-Coulier et al., 2016) since the opportunity to gain on-the-job experience in fair value auditing is higher. Alternatively, it is also possible that expertise at neither the national level nor the office level makes a significant difference in fair value reporting quality since most auditors use valuation specialists (Glover et al., 2019), and the quality of fair value estimates could be completely determined by the work of these specialists.

Studies comparing national-level and office-level industry specialists' influence on the quality of fair value measurement is limited and inconclusive. Using US-based data, Ahn et al. (2020) document that Level 3 fair value audit quality is greater when the fair value expertise is measured at the office level but find no significant association at the national level. Since there is no clear evidence suggesting whether fair value expertise is best captured at the office level or national level in a real estate setting, I use both measures to identify industry specialists. I further extend the analysis to the partner element of industry expertise, based on the

argument of Goodwin and Wu (2014) that industry expertise is rather individual-specific, and there is little exchange of expertise across partners within the office.

4.4 Sample and Research Design

4.4.1 Sample composition

The sample comprises all real estate firms listed in the ASX from 2007 to 2019. Market and accounting data items are obtained from the Thomson Reuters Eikon database. All the investment property-related data, details on auditors, audit fees and corporate governance data are hand-collected. Because the focus of this study is fair value adjustments, I restrict the sample to only those that adopted the fair value model for investment property valuation. I hand-collect the following information from the financial statements: (i) fair value of investment properties, as reported in the statement of financial position, (ii) fair value adjustments to investment properties, as reported in the income statement; (iii) name of the audit firm; (iv) name of the audit partner who signed the audit report; (iv) total remuneration of the auditor, as reported in the notes to the financial statements; and (v) data on corporate governance variables.

Table 4.1 about here

Table 4.1 presents the sample selection procedure. I began with an initial list of 78 firms listed as 'Real Estate' in ASX as of 16 June 2019 (obtained from the Eikon database). I excluded firms that did not report investment property or did not adopt the fair value model during the sample period.[22] This resulted in a sample of 54 publicly traded real estate firms with 496 firm-year observations. I then excluded 52

[22] I exclude firms that adopt the cost model because, under the cost model, the firm recognises revaluation losses but not gains, while under the fair value model, the firm recognises revaluation gains and losses. Thus, the cost model allows less room for managerial bias and the auditor task complexity is lower.

observations with missing data on key variables. This resulted in a sample of 444 firm-year observations for the period 2007–2019.

To identify audit firm tenure, I obtain 'audit firm name' data from Eikon for the selected 54 real estate firms, which is available for 1998 onwards,[23] and then I identify if there has been a change in audit firm since then. If a change of audit firm is observed before 2007, I consider the year of change as the first year of tenure, and if not, I consider 1998 as the first year of audit firm tenure. This means that, given any real estate firm retains an audit firm from 1998 to 2019, I could observe a maximum audit firm tenure of 22 years. For signing partner tenure identification, I hand-collect data from the annual report, going backward in time for each firm up to the year the partner signed the audit report for the first time.

4.4.2 Model specifications

Auditor fair value expertise gained through engagement tenure and the market's assessment of fair value adjustments

I examine whether the market valuation of fair value adjustments is conditioned on auditor fair value expertise gained through years of experience and industry specialisation. Since auditor changes are often associated with other confounding events that can influence stock prices, making clean inferences difficult (Mansi et al., 2004), I rely on the stock return model. The model (4.1) specification resembles those estimated by Israeli (2015), Easton et al. (1993) Kanagaretnam et al. (2009), Barth and Clinch (1998), and Hohenfels (2016). *RETURN* is the stock market return of firm i year *t*, measured from three months after year-end for year *t-1* to three months after

[23] No firm-year observation is available prior to the year 1998 in the Eikon database for this sample. I also checked on the ASX website 'announcement' section for annual reports. Market announcements released from November 1, 2002 onwards are available on ASX website in PDF format. Earlier announcements are available in edited text versions.

year-end for year *t*. *NI* is earnings before fair value adjustments in period *t*, *ΔNI* is the annual change in earnings before fair value adjustments in period *t*, and *FVA* is fair value adjustments recognised in earnings, all deflated by the beginning market value of equity. I include several control variables following previous studies: *VOLAT* is the volatility of returns, calculated as the standard deviation of monthly returns in the period *t-1*; *MTB* is the ratio of the beginning market value of equity and the book value of equity; *SIZE* is the natural log of the beginning market value of equity; *LOSS* is a dummy variable coded 1 if firm *i* reports negative net income for fiscal year *t*, and 0 otherwise. Given the findings from Chapter 3 that higher gearing moderates the association between fair value adjustments and stock return, I include *GEARING* as a control variable and calculate it as the sum of long-term and short-term borrowing divided by beginning total assets. I control for the property price movements and macroeconomic trends, (e.g., Chen & Tang, 2017) by including *INDEX*. *INDEX* represents the annual percentage of property return during the fiscal year based on all assets as determined by the Property Council/IPD Australian property index obtained from MSCI's index database. To control for better corporate governance, I include four governance variables: (i) natural log of the total number of board members (*BDSIZE*), (ii) the proportion of independent directors (*INDDIR*), (iii) CEO duality (*CEODUAL*), a dummy variable, with a value assigned as 1 if the CEO and chairperson are the same individual, and 0 otherwise, and (iv) *CEO_FY*, a dummy variable, with a value assigned as 1 in the first year of CEO change and 0 otherwise. *Year fixed effects* control for the differences across years.

$$RETURN_{it} = \beta_0 + \beta_1 NI + \beta_2 \Delta NI_{it} + \beta_3 FVA_{it} + \beta_4 VOLAT_{it} + \beta_5 MTB_{it} + \beta_6 SIZE_{it} + \beta_7 LOSS_{it} + \beta_8 GEARING_{it} + \beta_9 INDEX_{it} + \beta_{10} BDSIZE_{it} + \beta_{11} INDDIR_{it} + \beta_{12} CEODUAL_{it} + \beta_{13} CEO\_FY_{it} + Year\ fixed\ effects + \varepsilon_{it} \quad (4.1)$$

Auditor tenure is the length of the auditor–client relationship in years (Chen et al., 2008). The audit literature has long recognised that auditors' familiarity with client-specific issues and the quality of services increase with the years of experience with that client (Frederick & Libby, 1986; Geiger & Raghunandan, 2002; Myers et al., 2003). Tenure can be linked to the audit firm ($H_{4.1a}$) and audit partner ($H_{4.1b}$). I define audit firm tenure as the number of consecutive years of the audit firm–client relationship, and partner tenure as the number of consecutive years the audit report is signed by the audit partner.

Given the prior findings of a non-linear association between perceived audit quality and audit firm tenure (Boone et al., 2008), I divide firm tenure as follows: (i) *FT_SHORT,* which takes a value of 1 if the length of the auditor–client relationship is less than or equal to four years, and 0 otherwise; (ii) *FT_MEDIUM,* which takes a value of 1 if the length of the auditor–client relationship is between 5 and 10 years, and 0 otherwise; and (iii) *FT_LONG,* which takes a value of 1 if the length of the auditor–client relationship is longer than 10 years, and 0 otherwise. I use binary variables instead of the quadratic model (i.e., tenure and squared tenure) to test the differential influence of firm tenure following Hohenfels' (2016) argument that the use of binary variables mitigates multicollinearity problems. In line with the EU regulation requirement of a maximum audit firm engagement of 10 years, I use a cut-off point of 10 years to categorise long-tenure audit firms.

For audit partners, I divide partner tenure based on the sample median of two years, where *PT>2* takes a value of 1 if the engagement of signing partner is more than two years, and 0 otherwise (Carey & Simnett, 2006; Singh et al., 2019). Thus, I estimate the following regression of stock returns on *FVA* to test $H_{4.1a}$ and $H_{4.1b}$.

$$RETURN_{it} = \beta_0 + \beta_1 NI_{it} + \beta_2 \Delta NI_{it} + \beta_3 FVA_{it} + \beta_4 FT\_MEDIUM_{it} + \beta_5 FT\_MEDIUM_{it} \times FVA_{it} + \beta_6 FT\_LONG_{it} + \beta_7 FT\_LONG_{it} \times FVA_{it} + \beta_8 PT > 2_{it} + \beta_9 PT > 2_{it} \times FVA_{it} + \beta_{10} VOLAT_{it} + \beta_{11} MTB_{it} + \beta_{12} SIZE_{it} + \beta_{13} LOSS_{it} + \beta_{14} GEARING_{it} + \beta_{15} INDEX_{it} + \beta_{16} BDSIZE_{it} + \beta_{17} INDDIR_{it} + \beta_{18} CEODUAL_{it} + \beta_{19} CEO\_FY_{it} + Year\ fixed\ effects + \varepsilon_{it} \quad (4.2)$$

In model (4.2), a positive and significant coefficient of $FT\_MEDIUM_{it} \times FVA_{it}$ ($FT\_LONG_{it} \times FVA_{it}$) would indicate that investors evaluate the reporting quality of fair value adjustments to investment properties contained in the medium (long) tenure auditor group as higher compared to the reporting quality of fair value adjustments contained in the short-tenure auditor group and vice versa. Similarly, a negative (positive) and significant coefficient of the interaction term $PT > 2_{it} \times FVA_{it}$ would indicate a perceived higher information quality of fair value adjustments in the later years of audit partner engagement and vice versa. I do not predict the sign of coefficients.

Auditor industry expertise and the market's assessment of fair value adjustments

The second proxy used to measure fair value expertise relates to the auditor's industry specialisation. A long line of literature establishes that industry-expert auditors are associated with enhanced reporting quality (Balsam et al., 2003; Bratten et al., 2020). Several market share-based measures[24] are used to capture auditors' industry specialisation, such as auditors' market share in terms of client sales, client assets, audit fees, or the number of industry clients (Audousset-Coulier et al., 2016; Dunn & Mayhew, 2004). Following Ahn et al. (2020) and Cannon et al. (2014), I use the account-related or task-specific expertise of the auditor, i.e., the relative proportion

[24]Audousset-Coulier et al. (2016) carried out a review of the papers involving measurement of auditor industry specialisation and they note that a large majority of the papers use market share-based measures, while only a few use a portfolio approach (i.e., three papers) and weighted market share approach (i.e., one paper). However, the selection of the measure depends on the research setting, questions investigated and data availability.

of Level 3 investment properties audited by an audit firm during a year in the real estate sector. The underlying argument is that auditors who frequently deal with specific account categories can better leverage that set of knowledge to carry out auditing procedures. I capture this at both (a) the city level and (b) the national level (Ferguson et al., 2003; Francis et al., 2005). I also examine the fair value expertise at the audit partner level. I identify an audit partner as the fair value expert if they sign more than one audit report in respect of the sample firms in a year.

In model (4.3), the first variable of interest, *C_FVSP*, is an indicator variable that takes a value of 1 if a real estate firm is audited by the firm that ranks top within the city industry market in terms of the Level 3 investment property audited, and 0 otherwise. The second variable of interest *N_FVSP* is an indicator variable that takes a value of 1 if a real estate firm is audited by the firm that ranks top within the national industry market in terms of the Level 3 investment property audited, and 0 otherwise. Further, *P_ISP* is a dummy variable that takes a value of 1 if an audit partner signs more than one audit report of the sample firms in a year, and 0 otherwise. Thus, to test $H_{4.2}$, I estimate the following regressions of stock returns on fair value adjustments:

$$RETURN_{it} = \beta_0 + \beta_1\, NI_{it} + \beta_2 \Delta NI_{it} + \beta_3 FVA_{it} + \beta_4 C\_FVSP_{it} + \beta_5 C\_FVSP_{it} \times FVA_{it}$$
$$+\beta_6 N\_FVSP_{it} + \beta_7 N\_FVSP_{it} \times FVA_{it} + \beta_8 P\_ISP_{it} + \beta_9\, P\_ISP_{it} \times FVA_{it} + \beta_{10}\, VOLAT_{it}$$
$$+ \beta_{11}\, MTB_{it} + \beta_{12}\, SIZE_{it} + \beta_{13}\, LOSS_{it} + \beta_{14} GEARING_{it} + \beta_{15}\, INDEX_{it} + \beta_{16} BDSIZE_{it} +$$
$$\beta_{17} INDDIR_{it} + \beta_{18} CEODUAL_{it} + \beta_{19} CEO\_FY_{it} + \textit{Year fixed effects} + \varepsilon_{it} \qquad (4.3)$$

If the perceived quality of fair value adjustments audited by industry experts at the city level and national level are higher than that of non-industry experts, in model (4.3) I would observe a positive and significant coefficient of β_5 and β_7

respectively. Further, if investors value the fair value expertise at the audit partner level, I would observe a positive and significant coefficient of β_9.

4.5 Empirical Results

4.5.1 Descriptive statistics

Table 4.2 provides descriptive statistics for the variables[25] used in the regression analysis. The mean and median values of *RETURN* (mean=0.09 and median=0.11) show that firms, on average, experience positive buy-and-hold returns during the sample period. While the mean value of pre-fair value adjustment earnings (*NI*) is positive (mean=0.03), the change in pre-fair value adjustment earnings (ΔNI) on average is negative (mean=-0.03). I also observe that the mean *FVA* is -0.30 percent of the market value of equity.[26] The median audit firm tenure is seven years, with a maximum value of 22 years. This indicates that while audit firm changes are not uncommon, some firms engage the same audit firm for a longer tenure. Further, the median audit partner tenure is two years, ranging from one to seven years, which is comparable with prior Australian studies (e.g., Singh et al., 2019). Panel B shows that the auditor–client relationship lasts from 5 to 10 years for 41 percent of the firm-year observations, whereas 29 percent firm-years have an auditor–client relationship for more than 10 years. 52 percent of the sample firm observations show a partner tenure of two years or less. Around 30 percent and 25 percent of firm-year observations are audited by city-level and national-level industry specialist auditors, respectively.

[25] All continuous variables are winsorised at the 1 per cent and the 99 per cent levels.

[26] The percentage of fair value adjustments to the market value of equity is quite low because fair value adjustments include both upward (positive) and downward (negative) adjustments, generating an average of a small value.

Figure 4.1 indicates the industry specialist audit firms in the Australian real estate sector in terms of the relative market share of investment properties audited. Considering the experience of auditing Level 3 properties, PwC was the industry expert until 2015 and in 2019, while EY's audit experience grew gradually over time and ranked highest in the years 2016 to 2018. Unlike the banking industry, where previous studies report KPMG as the clear industry leader over the entire sample years (e.g., Bratten et al., 2020; Kanagaretnam et al., 2009), I do not find any single audit firm industry expert.

Panel C presents Pearson correlation coefficients for both the continuous and dichotomous variables. The modest bivariate correlations among independent variables suggest a low potential for collinearity in the multivariate regression. The VIFs of the independent variables confirm this.

Table 4.2 about here

Figure 4.1 about here

4.5.2 Tests of hypothesis 1: The influence of auditor tenure on the association between return and fair value adjustments

Table 4.3 presents the results of the fair value adjustments–return association model using firm tenure and partner tenure as interaction variables. Column (1) confirms a significant positive association between *FVA* and *RETURN* at $p<0.01$, indicating that investors positively price the reported adjustments. Column (2) shows that the coefficient of *FT_MEDIUM*×*FVA* is positive and significant (coefficient=0.279, t-stat=2.478), indicating that the perceived quality of fair value adjustments is higher for the medium-tenure auditor group (5–10 years) as compared to the short-tenure auditor group (0–4 years). However, the insignificant interaction of *FT_LONG*×*FVA* reveals that beyond a certain point (i.e., 10 years), firm tenure ceases to matter.

Overall, results provide some evidence of a non-linear influence of audit firm tenure on the perceived reporting quality of fair value adjustments.

Regarding audit partner tenure, results in the third column shows that the coefficient of *PT>2×FVA* is significantly positive (coefficient=0.210, t-stat=2.264), implying that investors evaluate fair value adjustments to be of higher quality after two years of partner engagement relative to initial years of service. Consistent with the 'expertise' argument, this implies that the longer the partner tenure, the greater the client-specific knowledge acquired, the more likely the auditor will detect and reveal misstatements, and the higher the perceived information quality of fair value adjustments.

The expanded model in column (4) reports the results when both firm tenure and partner tenure measures are included in the same model. The coefficient of *FVA* and interaction terms *FT_MEDIUM×FVA* and *PT>2×FVA* remain significantly positive at $p<0.05$, confirming the previous results. I also observe that the coefficient of *FT_MEDIUM×FVA* (0.251) is higher than the coefficient of *PT>2×FVA* (0.194), indicating that audit firm tenure is considered more important to the quality of fair value adjustments than partner tenure.

Overall, the findings suggest that the differences in the duration of audit firm tenure and partner tenure moderate the fair value adjustments–return association and that the moderating role of audit firm tenure is more prominent than audit partner tenure.

Table 4.3 about here

4.5.3 Tests of hypothesis 2: The influence of auditor industry specialisation on the association between return and fair value adjustments

In Table 4.4, I examine whether the information quality of fair value adjustments differs depending on the engagement of industry-expert auditors. I find that the coefficients of *FVA* remain significantly positive at p<0.01 across all the regression specifications, suggesting value relevance of fair value adjustments. However, neither the coefficient of the city-level measure of specialist auditors (*C_FVSP*×*FVA*) in column (1) nor the coefficient of the national-level measure of specialist auditors (*N_FVSP*×*FVA*) in column (2) are statistically significant. Industry expertise at the partner level (*P_ISP*×*FVA*) in column (3) also does not exhibit any significant influence across the models. This implies no incremental valuation implications on fair value adjustments for engaging industry leaders in a real estate setting, which is consistent with the $H_{4.2}$.

Further, column (5) reports the results with all the measures of auditor fair value expertise. The results are qualitatively similar to those of the earlier test results.

Table 4.4 about here

4.5.4 Robustness checks

Analysis of sub-samples based on auditor tenure

To test the robustness of the results, I estimate the regression of stock returns on *FVA,* i.e., model (4.1), for the sub-samples. I test the moderating role of auditor tenure by examining the differences in the *FVA–RETURN* association for sub-samples of (i) short-term, medium-term and long-term audit firm tenure; and (ii) above median and less than or equal to industry median partner tenure. Because the audit firm of each firm is sticky over the years and does not change much each year, the residuals of

each firm may be correlated over the years. To correct for the correlated residuals, I estimate model (4.1) using standard errors clustered by firms.

Table 4.5 shows the results of regression for the sub-samples with different ranges for the tenure of audit firms and signing partners. Regarding audit firm tenure, while the *FVA–RETURN* association is not significant for the short-tenure auditor group (Column 1), I find a significant association at $p<0.01$ for both medium-tenure (*FVA*= 0.464, t-stat=2.985) (Column 2) and long-tenure (*FVA*=0.894, t-stat=3.737) (Column 3) sub-samples. Regarding audit partners, I find that fair value adjustments are value relevant beyond two years of tenure (*FVA*=0.304, t-stat=2.472) (Column 4) and does not show a statistically significant association with *RETURN* for the below-median tenure group (Column 5).

Overall, robustness analysis results based on sub-samples are consistent with the previously reported results and indicate that auditor fair value expertise developed over the years of engagement matters in investors' valuations of fair value adjustments.

Table 4.5 about here

Two-stage regression controlling for self-selection bias

Prior research (Chaney et al., 2004; Lawrence et al., 2011) suggests that the choice of an audit firm is endogenous, i.e., certain firm characteristics might motivate real estate firms to self-select their auditors and vice versa. For instance, real estate firms with high-quality fair value reporting may systematically choose industry-expert auditors, and industry-expert auditors may likewise prefer to engage with firms exercising high-quality reporting practices. Studies also show that the choice of auditor tenure is subject to self-selection bias (Li, 2010; Read & Yezegel, 2016). For instance, firms with lower reporting quality may dismiss audit firms more often, or auditors may be inclined to resign from engagements when they perceive that the risk

of litigation against them is high. Although I control for various characteristics related to such risks, there might be other factors that bias the results which are not captured by the models.

To control for possible endogeneity, I use Heckman's (1979) two-step estimation procedure, which generates consistent estimates in the presence of attrition by eliminating the bias that could arise from omitted variables when the sample is not random (Lennox et al., 2012). In the first stage, I obtain consistent estimates from a probit regression that evaluates whether audit firm tenure (*AUDITOR_TENURE*) is related to certain firm characteristics (model (4.4)). Table 4.6 column (1) reports the first-stage regression results. From the results of this first-stage regression, I calculate an inverse mills ratio (*IMR*) and subsequently include this ratio in the second stage regression to control self-selection bias. A significant value for the coefficient on *IMR* in the second stage would indicate an endogeneity issue.

Since previous studies specifically do not suggest an auditor tenure model for real estate firms, I estimate the following probit model in the first stage (e.g., Li, 2010; Singh et al., 2019):

$$AUDITOR\_TENURE = f\ (ROA\ LIQUIDITY\ CFO\ AUD\_FEE\ BIG4\ VOLAT\ MTB\ SIZE\ LOSS\ GEARING\ BDSIZE\ INDDIR\ CEODUAL\ CEO\_FY\ Year\ fixed\ effects) \quad (4.4)$$

Here, *AUDITOR_TENURE* is coded as 1 for the medium or long audit firm tenure group in comparison with short-tenure group (coded as 0); *ROA* is returns on assets, measured as net income at *t* deflated by beginning total assets; *LIQUIDITY* is the current ratio, calculated as current assets divided by current liabilities at *t*; *CFO* is operating cash flows divided by beginning total assets, *AUD_FEE* is the natural logarithm of the total remuneration of the auditor; *BIG4* is an indicator variable that

takes a value of 1 if the auditor is one of the Big 4, and 0 otherwise. Other variables as defined previously.

Table 4.6 reports the results from the second stage regressions, including *IMR* as an additional control. I find that the coefficient on *IMR* is not significant, suggesting that self-selection bias does not pose a problem in this study. As presented in Table 4.6, the coefficient of *FT_MEDIUM×FVA* and *PT>2×FVA* is positive and significant at $p<0.05$. Together, these results are consistent with those previously reported, even after controlling for potential self-selection bias.

Table 4.6 about here

Alternative measure of audit firm industry specialisation

One of the shortcomings of auditor industry specialisation studies is that the results are highly sensitive to the measures used because different measures can result in different rankings of auditor expertise (Audousset-Coulier et al., 2016). To test whether the results hold across other specialisation measures, I apply an audit fee-based measure[27], i.e., audit firms' fees during a year from the industry relative to that industry's total fees (Wang et al., 2017). The selection is motivated by the findings of the Audousset-Coulier et al.'s (2016) study, where the authors, in examining the validity of different measures, suggest that researchers should prioritise audit fee-based measures. I re-run model (4.3), including *C_HIGHFEE* and *N_HIGHFEE* as interaction variables. *C_HIGHFEE* is an indicator variable that takes a value of 1 if a real estate firm hires the top-ranked auditor within a city industry market in terms of market share based on audit fees, and 0 otherwise; and *N_HIGHFEE* is an indicator variable that takes a value of 1 if a real estate firm hires the top-ranked auditor within

[27] Audit fee-based measures typically lead to the selection of the largest players on the market (i.e., the Big 4) as specialists, while the measure based on the number of clients allows identifying some smaller auditors as specialists. Hence, I also rank audit firms based on the number of clients. However, for my sample, the measure based on the number of clients generates the same ranking as the audit fee-based measure.

the national industry market in terms of market share based on audit fees, and 0 otherwise.

Figure 4.2 plots the relative market share of audit fees and identifies KPMG as the industry leader until 2014 and in 2019 in the Australian real estate sector, while PwC was the expert during this period on the task-specific measure. I further observe that KPMG's relative audit fee share reached its peak in 2009 and experienced a gradual decline since then. PwC's audit fee remained relatively steady at the average level, with some fluctuations, and it was the industry specialist for 2015. EY's market share of audit fees increased slowly and ranked top in 2016–2018. Table 4.7 shows the regression results. Consistent with previous results, I find no significant influence of *C_HIGHFEE* and *N_HIGHFEE* on the *FVA–RETURN* association.

Figure 4.2 about here

Table 4.7 about here

Analysis excluding financial crisis period

To test whether the volatility in capital markets during the 2008 GFC is influencing the results, I re-run model (4.2) after excluding 2008 firm-year observations. Table 4.8 shows that the results are consistent with those reported in Table 4.3. Therefore, the market volatility of 2008 does not change the findings.

Table 4.8 about here

4.5.5 Additional analysis

Moderating role of audit firm rotation and partner rotation

Chi and Huang (2005) argue that the 'learning experience' within an audit firm might not be influenced by the change of audit partner as the client-specific information is transmitted between auditors, but a change in audit firm effectively ends the learning experience due to the non-transmission of knowledge. This suggests that change in

audit partner may have no significant influence on the quality of fair value adjustments if the audit firm remains the same. To examine this, I include *FTΔPT* and *ΔFTΔPT* in model (4.1) as interaction variables, where *FTΔPT* is an indicator variable that takes a value of 1 if there is a rotation of the signing partner with no change in audit firm, and 0 otherwise; *ΔFTΔPT* is an indicator variable that takes a value of 1 if there is a rotation of both the signing partner and audit firm, and 0 otherwise; and *FTPT* is an indicator variable that takes a value of 1 if neither the signing partner nor the audit firm changes, and 0 otherwise. Table 4.9 presents the results. I find that while *FTΔPT* negatively moderate *FVA–RETURN* association, the interaction term *ΔFTΔPT*×*FVA* is not significant. This means audit partner rotation has a significant negative influence on the perception of fair value adjustments quality, indicating that auditor fair value expertise at the partner level matters.

Table 4.9 about here

Influence of auditor tenure on the perceived reporting quality of unrealised gains

In the main analysis, this study uses both upward and downward adjustments recognised for investment properties. The reporting of unrealised gains is more frequent, i.e., around 70 per cent of adjustments to investment properties in this sample are upward, and are of greater concern to investors and auditors. Scholars such as Burgstahler and Dichev (1997) provide evidence that managers use accounting discretion to avoid small earnings declines. Managers of publicly listed firms have incentives to report a pattern of increasing earnings (Beatty et al., 2002) because of the stock price penalties for falling short of prior earnings (Barth et al., 1999). Using Australian data, He et al. (2020) document that managers' report larger unrealised agricultural gains when they fail to meet earnings target. The monitoring role of the auditor and their fair value expertise is perhaps more important to assure

the reliability of unrealised gains on investment properties. Thus, I run the model (4.5) to examine whether auditor fair value expertise obtained through engagement tenure mitigates the faithful representation concerns associated with unrealised gains.

$$RETURN_{it} = \beta_0 + \beta_1\ PREGAIN\_NI_{it} + \beta_2 \Delta NI_{it} + \beta_3 FV\_GAIN_{it} + \beta_4 FT\_MEDIUM_{it} + \beta_5\ FT\_MEDIUM_{it} \times FV\_GAIN_{it} + \beta_6 FT\_LONG_{it} + \beta_7\ FT\_LONG_{it} \times FV\_GAIN_{it} + \beta_8 PT > 2_{\ it} + \beta_9\ PT > 2_{\ it} \times FV\_GAIN_{it} + \beta_{10}\ VOLAT_{it} + \beta_{11}\ MTB_{it} + \beta_{12}\ SIZE_{it} + \beta_{13}\ LOSS_{it} + \beta_{14} GEARING_{it} + \beta_{15}\ INDEX_{it} + \beta_{16} BDSIZE_{it} + \beta_{17} INDDIR_{it} + \beta_{18} CEODUAL_{it} + \beta_{19} CEO\_FY_{it} + Year\ fixed\ effects\ + \varepsilon_{it} \quad (4.5)$$

The regression results are reported in Table 4.10. In column (1), the coefficient of *FV_GAIN* is significantly positive at p<0.10, consistent with prior findings that investors perceive unrealised gains as informative. In column (2), the coefficients of *FT_MEDIUM×FV_GAIN* (coefficient=0.620, t-stat=2.088) and *FT_LONG× FV_GAIN* (coefficient=0.798, t-stat=1.792) are positive and significant, indicating that the market valuation of unrealised gains is higher for both the medium-tenure and long-tenure auditor groups relative to the short-tenure auditor group. In the primary analysis, the longer-tenure auditor had no significant influence on the perceived reporting quality of fair value adjustments. However, focusing on fair value gains show that the expertise benefit arising from audit firm tenure continues in the later years. Further, confirming the incremental influence of partner tenure, on column (3), I find that the coefficient of *PT>2×FV_GAIN* (coefficient=1.076, t-stat =4.117) is significant and positive.

Table 4.10 about here

Influence of engaging a Big 4 auditor

A large body of empirical research supports the notion that Big 4 audit firms are linked to superior financial reporting outcomes. Clients of Big 4 audit firms exhibit higher earnings quality (Becker et al., 1998; Francis et al., 1999), less likelihood of

subsequently issuing an accounting restatement (Eshleman & Guo, 2014) and a lower probability of fraudulent reporting (Lennox & Pittman, 2010) relative to the clients of non-Big 4 audit firms. The base argument is that larger auditors have larger client portfolios and higher incentives to protect their brand name reputation than smaller auditor firms (DeAngelo, 1981). The larger size and greater resources enable Big 4 auditors to invest in high-quality training and audit technology, resulting in better-trained auditors (Albersmann & Quick, 2020; Boone et al., 2010).

However, more recent studies cast doubt on the superiority of Big 4 auditors based on the argument that a firm's choice of an auditor is endogenous.[28] Using a propensity-score matching model to match each non-Big 4 client with a Big 4 client, Lawrence et al. (2011) show that clients of Big 4 auditors do not exhibit higher audit quality than clients of non-Big 4 auditors. In a similar vein, Boone et al. (2010) find that there is little difference in actual audit quality between Big 4 and mid-tier audit firm clients.

Only a few studies consider the moderating role of Big 4 in the context of fair value estimates (e.g., Lee & Park, 2013). Kanagaretnam et al. (2009) find that the market valuation of discretionary loan loss provisions is greater for banks audited by Big 4 auditors and industry specialist auditors. However, once the auditor type and industry experts are separated out, only industry expertise has a significant impact on the discretionary loan loss. This means the reason that possibly drives the incremental influence of Big 4 auditors on fair value reporting quality is that the industry experts typically come from the Big 4 group.

In this study, I argue that, in the Australian real estate setting, the mere involvement of Big 4 auditors may not be a sufficient indicator of the high-quality

[28] That is, firms with better performance and higher quality earnings are more likely to choose Big 4 auditors. Similarly, Big 4 auditors will prefer less risky clients with higher earnings quality.

reporting of fair value information from an investors' point of view for at least three reasons. First, more than 75 per cent of Australian real estate firms are audited by the Big 4 auditors, implying that engaging a Big 4 auditor is less likely to generate competitive advantage. Second, the audit inspection report of 2019 by the ASIC reveals failure by the Big 4 audit firms to perform sufficient verification in support of their opinions around the key audit areas (ASIC, 2019), raising questions around the quality of their services in the verification of critical accounting estimates. This is consistent with the findings by Griffith et al. (2015) that Big 6 auditors rely overly on the assumptions and test models generated by managers and often fail to adequately test the assumptions and data of the estimation model. Third, the governance mechanism of real estate firms in Australia is quite strong and transparent (Sustainalytics, 2020), easing the reliance of investors on Big 4 audit firms.

In Table 4.11, I examine the moderating role of Big 4 auditors on the market valuation of fair value adjustments. I find that the coefficient of *Big 4×FVA* is positive but not significant at $p<0.10$. This is consistent with the argument that the market perceives no difference in the information content and quality of fair value adjustments for real estate firms audited by Big 4 auditors relative to the firms audited by non-Big 4 auditors.

Table 4.11 about here

4.6 Conclusion

Motivated by the continued concerns around the subjectivity of Level 3 fair values, numerous deficiencies in its audit process and doubts over the perceived superior quality of fair value disclosures audited by Big 4 auditors, this study investigates whether auditors' fair value expertise plays a key role in moderating investors' evaluations of fair value reporting quality. I posit that auditors develop fair value

expertise over the length of their engagement tenure with the client and/or through industry specialisation, and such expertise can contribute towards enhanced information quality of fair value reporting. I examine this using a sample of Australian real estate firms. The fair value expertise variables are constructed using data at the firm level and the partner level.

The results provide an indication that the relation between audit firm tenure and perceived reporting quality of fair value adjustments can be non-linear, (e.g., Boone et al., 2008; Hohenfels, 2016). Specifically, the finding that the value relevance of fair value adjustments is increases during the mid-years (5 to 10 years) relative to the initial years and is not affected significantly beyond 10 years of firm tenure suggests that a 10-year limitation imposed by EU regulation for EU companies probably has practical value and is well accepted from the investors' viewpoint. However, focusing on upward fair value adjustments, I find a positive influence of both medium and long tenure on investors' evaluations, suggesting that audit firm tenure is beneficial in settings where faithful representation concerns are more severe, and client-specific knowledge is of high importance. This is also consistent with the 'expertise' notion that investors value auditor experience and familiarity with firm-specific issues, and the longer-tenure effect is more prominent for more questionable upward fair value adjustments.

At the partner level, I find that the value relevance of fair value adjustments is significantly higher after two years of audit partner appointment. Consistent with the expertise argument, this indicates that investors probably relate short-tenured partners to higher dependence on managers' estimates and lower ability to verify the reasonableness of fair value assumptions, and that the market valuation of fair value adjustments increases as partners' expertise grows with experience.

Theoretically, superior industry-specific knowledge seems critical for auditing Level 3 properties in a real estate setting. Yet, I do not find evidence supporting incremental valuation implications for engaging industry experts. I consider industry-specific fair value expertise at both the firm level (i.e., city market and national market) and the partner level. None of the measures show a significant influence on the market valuation of fair value adjustments. The lack of results might be due to several reasons. First, the majority of the prior studies (Bratten et al., 2020; Kanagaretnam et al., 2009) that report higher informativeness of fair value amounts as a result of engaging industry experts use the financial institution context, which is highly regulated, and involves the auditing of complex transactions and reporting rules in a dynamic regulatory environment (PwC, 2013). Due to the higher complexity, the demand for specialised auditors might be greater in the financial sector than in any other sector (Bratten et al., 2019). Second, unlike the banking industry, where previous studies report KPMG as the clear industry leader over all the sample years (Bratten et al., 2020; Kanagaretnam et al., 2009), in the real estate setting I could not identify a single audit firm as an industry expert. The three biggest audit firms are so close in terms of audit fee shares, the number of clients and proportion of Level 3 properties audited that the separation of industry experts can be problematic from an investor's perspective. Third, since auditors rely on valuation specialists' work (Glover et al., 2019), the quality of fair value measurements can be completely determined by the work of these specialists and the expertise at the national or at the office level may not make a significant observable difference in the quality of fair value reporting (Ahn et al., 2020).

Overall, I provide evidence that fair value expertise developed through sustained engagements with clients over time is crucial in retaining investor confidence in complex accounting estimates, even though the firm makes detailed

disclosures or involves external valuers in the asset valuation. Findings are robust after controlling for self-selection bias. This study is one of the few examining the role of both audit firm and audit partner fair value expertise in ensuring the reporting quality of Level 3 fair value estimates in real estate sector. Given Vergauwe and Gaeremynck's (2018) finding that investors do not use additional measurement-related fair value disclosures for investment properties, I suggest that investors' perceptions of the quality of fair value adjustments might be driven by the auditor's fair value expertise. Thus, the findings highlight the role of auditor expertise in mitigating faithful representation concerns associated with fair value estimates and are relevant for policymakers worldwide.

However, the results are subject to the following limitations, suggesting a need for future research. First, specialisation is an unobservable construct, so the archival measures used in this study may not fully capture auditors' industry knowledge and experience. Second, I collected data on audit firm tenure since 1998, i.e., if any of the sample firms appointed the auditors before 1998, I have not been able to take that tenure into account. But this might be a possible case for only 10 firms in this sample, as only 14 firms of the sample were listed before 1998, four of which show auditor change after 1998 but before 2007, making it possible to track the actual audit firm tenure since 2007. Third, the study only addresses investors as financial statement users. It would be worthwhile for future research to focus on other stakeholders such as creditors or financial analysts. Finally, the results are based on an Australian real estate sample and might only be valid for this single industry and its regulatory environment.

Chapter 4 Tables

Table 4.1: Sample selection process

	Number of firms		Percentage of firms	
	Less	Remaining	Less (%)	Remaining (%)
ASX-listed real estate firms in Thomson Reuters Eikon as of 16 June 2019		78		100%
Excluding the firms:				
That did not adopt the recognition regime during the sample period	4	74	5%	95%
With no investment property assets from 2007 to 2019	20	54	26%	69%
Final sample				
Firms		54		69%
Firm-years (for 2007 to 2019)		444		

Table 4.2: Descriptive Statistics

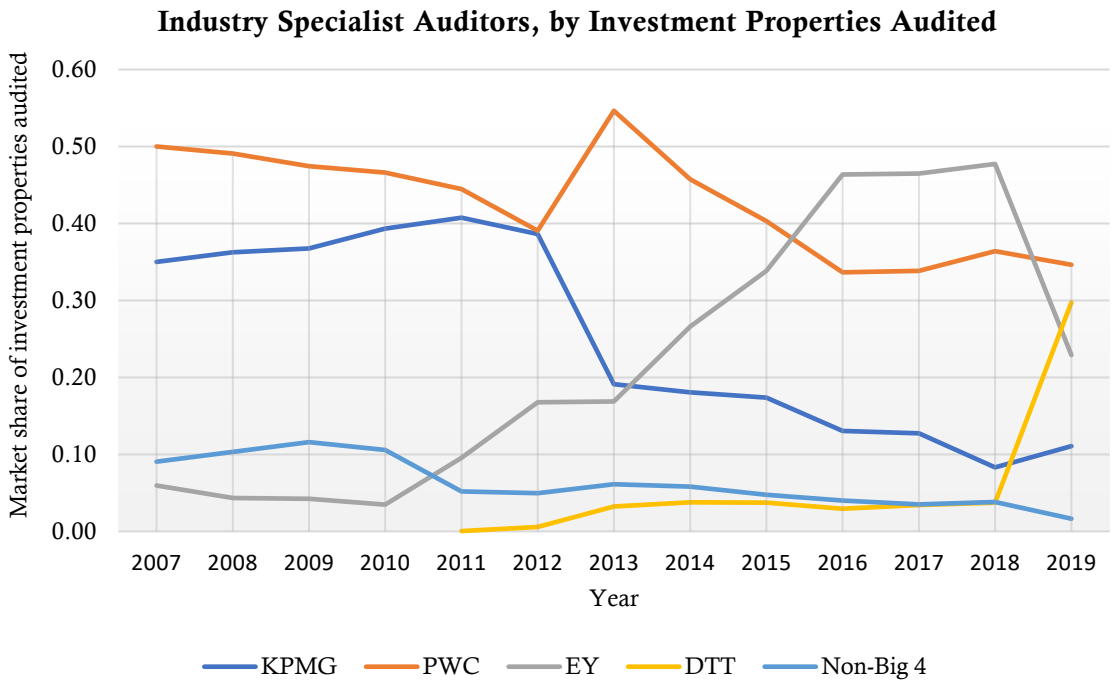
Panel A: Continuous variables

Variables	N	Mean	SD	Min	25th	50th	75th	Max
RETURN	444	0.091	0.299	-0.034	-3.449	0.111	0.245	1.107
NI	444	0.033	0.274	-1.327	0.010	0.058	0.083	1.614
ΔNI	444	-0.032	0.527	-3.807	-0.026	0.001	0.035	1.831
FVA	444	-0.003	0.279	-1.761	-0.001	0.028	0.070	0.664
VOLAT	444	0.073	0.076	0	0.034	0.049	0.073	0.445
MTB	444	1.344	1.691	-0.142	0.810	1.030	1.276	12.558
SIZE	444	19.904	2.178	11.149	18.875	20.084	21.281	25.235
GEARING	444	0.328	0.182	0.000	0.223	0.309	0.432	1.041
INDEX	444	0.095	0.043	-0.023	0.092	0.103	0.118	0.166
BDSIZE	444	1.749	0.350	0.693	1.609	1.792	2.079	2.565
INDDIR	444	0.558	0.243	0.000	0.414	0.600	0.750	1
Firm Tenure	444	8.056	5.045	1	4	7	11	22
Partner Tenure	444	2.671	1.447	0	1	2	4	7

Panel B: Dichotomous variables

Variables		Yes=1		No=0	
	N	n	%	n	%
FT_SHORT	444	132	30%	312	70%
FT_MEDIUM	444	183	41%	261	59%
FT_LONG	444	129	29%	315	71%
PT≤2	444	230	52%	214	48%
PT>2	444	214	48%	230	52%
C_FVSP	444	133	30%	311	70%
N_FVSP	444	104	23%	340	77%
C_HIGHFEE	444	145	33%	299	67%
N_ HIGHFEE	444	122	27%	322	73%
P_ISP	444	114	26%	330	74%
LOSS	444	77	17%	367	83%
CEODUAL	444	42	9%	402	91%
CEO_FY	444	42	9%	402	91%
BIG4	444	337	76%	107	24%

Figure 4.1: Industry specialist auditors by Level 3 investment properties audited by year



Panel C: Pearson correlation

Variables	*(1)*	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*	*(10)*	*(11)*	*(12)*	*(13)*	*(14)*	*(15)*	*(16)*	*(17)*	*(18)*	*(19)*	*(20)*
(1) RETURN	1																			
(2) NI	0.18*	1																		
(3) ΔNI	0.09	0.29*	1																	
(4) FVA	0.23*	-0.04	0.08	1.00																
(5) VOLAT	-0.12*	-0.21*	0.04	-0.17*	1															
(6) MTB	-0.01	-0.04	0.01	0.15*	-0.07	1														
(7) SIZE	0.04	0.03	0.18*	0.26*	-0.381*	0.14*	1													
(8) LOSS	-0.29*	-0.36*	-0.21*	-0.40*	0.17*	-0.05	-0.30*	1												
(9) GEARING	-0.11*	-0.20*	-0.04	-0.10*	0.30*	0.13*	-0.39*	-0.29*	1											
(10) INDEX	0.35*	0.11*	0.08	0.24*	-0.20*	0.09	0.04	-0.31*	-0.05	1										
(11) BDSIZE	0.05	0.04	0.12*	0.22*	-0.29*	0.05	0.72*	-0.27*	-0.40*	-0.06	1									
(12) INDDIR	0.07	-0.15*	0.01	-0.02	-0.09	0.05	0.44*	-0.09	-0.07	-0.01	0.31*	1								
(13) CEODUAL	-0.10*	-0.14*	-0.12*	-0.18*	0.28*	-0.06	-0.38*	0.24*	0.20*	-0.04	-0.35*	-0.28*	1							
(14) CEO_FY	-0.12*	-0.12*	-0.01	-0.08	0.04	-0.07	-0.02	0.14*	0.04	-0.08	-0.05	0.03	0.00	1						
(15) FT_MEDIUM	0.06	-0.04	0.00	0.09	0.07	0.01	-0.08	0.05	0.06	0.07	-0.05	-0.03	0.07	0.06	1					
(16) FT_LONG	0.04	0.03	0.03	0.06	-0.09	-0.10*	0.28*	-0.20*	-0.23*	0.00	0.26*	0.09	-0.12*	0.0	-0.54*	1				
(17) PT>2	0.04	-0.05	-0.00	-0.02	-0.02	-0.09	0.03	-0.02	-0.07	0.07	0.03	0.05	-0.00	-0.04	0.02	0.11*	1			
(18) C_FVSP	-0.1	0.0	0.0	0.0	-0.1	-0.09*	0.31*	-0.10*	-0.10*	-0.08	0.26*	0.11*	-0.21*	0.09	-0.05	0.12*	-0.05	1		
(19) N_FVSP	-0.01	0.00	0.00	0.02	-0.06	0.03	0.29*	-0.10*	-0.13*	0.00	0.20*	0.17*	-0.18*	0.09*	-0.07	0.13*	-0.05	0.57*	1	
(20) P_ISP	0.05	0.01	0.02	0.03	-0.09*	-0.05	0.14*	-0.09	-0.04	0.07	-0.00	0.17*	-0.14*	0.11*	0.06	0.03	-0.07	0.08	0.11*	1
VIF		1.61	1.25	1.46	1.97	1.24	3.45	1.89	1.49	8.47	2.56	1.45	1.35	1.09	1.54	1.74	1.10	1.81	1.85	1.18

Note: * represents significance level at <0.05. Variables are defined in Appendix A.

Table 4.3: Impact of audit firm tenure and audit partner tenure on the market valuation of fair value adjustments

DEP=RETURN	Pred.	(1) Full Sample *(t-stat)*	(2) Firm Tenure *(t-stat)*	(3) Partner Tenure *(t-stat)*	(4) Expanded *(t-stat)*
Intercept		0.470**	0.405**	0.519***	0.451**
		(2.563)	(2.187)	(2.817)	(2.419)
NI		0.105*	0.106*	0.102*	0.101*
		(1.908)	(1.918)	(1.857)	(1.831)
ΔNI		0.011	-0.006	0.001	-0.015
		(0.425)	(-0.218)	(0.022)	(-0.554)
FVA	+	0.177***	0.094	0.051	-0.017
		(3.435)	(1.568)	(0.682)	(-0.212)
FT_MEDIUM			0.027		0.028
			(0.903)		(0.948)
FT_MEDIUM× FVA	+/-		0.279**		0.251**
			(2.478)		(2.221)
FT_LONG			0.011		0.010
			(0.302)		(0.285)
FT_LONG × FVA	+/-		0.297		0.328
			(1.254)		(1.384)
PT>2				-0.008	-0.009
				(-0.335)	(-0.373)
PT>2 × FVA	+/-			0.210**	0.194**
				(2.264)	(2.075)
VOLAT		-0.266	-0.316	-0.263	-0.310
		(-1.203)	(-1.426)	(-1.198)	(-1.405)
MTB		0.001	0.000	0.001	0.001
		(0.089)	(0.022)	(0.178)	(0.116)
SIZE		-0.024**	-0.020**	-0.028***	-0.023**
		(-2.558)	(-2.054)	(-2.924)	(-2.389)
LOSS		-0.134***	-0.120***	-0.142***	-0.130***
		(-3.159)	(-2.790)	(-3.356)	(-3.004)
GEARING		-0.119	-0.127	-0.127	-0.135*
		(-1.487)	(-1.587)	(-1.601)	(-1.696)
INDEX		1.366*	1.251	1.488*	1.374*
		(1.713)	(1.552)	(1.860)	(1.699)
BDSIZE		0.017	0.010	0.031	0.023
		(0.318)	(0.182)	(0.582)	(0.422)
INDDIR		0.150**	0.128**	0.148**	0.127**
		(2.560)	(2.150)	(2.531)	(2.144)
CEODUAL		0.002	-0.022	-0.006	-0.028
		(0.048)	(-0.455)	(-0.134)	(-0.589)
CEO_FY		-0.061	-0.059	-0.062	-0.061
		(-1.455)	(-1.404)	(-1.483)	(-1.449)
Year fixed effects		Yes	Yes	Yes	Yes
N		444	444	444	444
Adjusted R^2		0.287	0.293	0.293	0.297
F-stat		8.432	7.546	8.045	7.232

Note: Column (1) reflects model (4.1). Column (2) includes the interaction terms for firm tenure, and Column (3) includes the interaction terms for partner tenure. Column (4) reflects model (4.2). *, ** and *** represent significance levels of 0.10, 0.05 and 0.01, respectively (two-tailed). Variables are defined in Appendix A.

Table 4.4: Regression estimates on the association between returns and fair value adjustments conditioned on the industry-specific expertise and the tenure of auditor

DEP=RETURN	Pred.	Industry Specialisation				(5) Tenure & Industry Specialisation
		(1) City	(2) National	(3) Partner	(4) Expanded	
		(t-stat)	*(t-stat)*	*(t-stat)*	*(t-stat)*	*(t-stat)*
Intercept		0.421**	0.466**	0.458**	0.426**	0.404**
		(2.271)	(2.507)	(2.493)	(2.282)	(2.139)
NI		0.101*	0.103*	0.102*	0.098*	0.096*
		(1.832)	(1.876)	(1.849)	(1.783)	(1.741)
ΔNI		0.009	0.010	0.007	0.008	-0.015
		(0.362)	(0.378)	(0.285)	(0.327)	(-0.553)
FVA		0.172***	0.174***	0.166***	0.167***	-0.020
		(3.288)	(3.339)	(3.173)	(3.169)	(-0.243)
C_FVSP		-0.048*			-0.057	-0.064*
		(-1.651)			(-1.595)	(-1.778)
C_FVSP×FVA	+/-	-0.023			-0.117	-0.053
		(-0.125)			(-0.352)	(-0.160)
N_FVSP			-0.003		0.030	0.034
			(-0.114)		(0.803)	(0.908)
N_FVSP×FVA	+/-		0.048		0.008	-0.014
			(0.234)		(0.021)	(-0.038)
P_ISP				0.009	0.007	0.016
				(0.297)	(0.233)	(0.547)
P_ISP×FVA	+/-			0.196	0.216	0.001
				(1.134)	(1.053)	(0.004)
FT_MEDIUM						0.027
						(0.905)
FT_MEDIUM×FVA	+/-					0.269**
						(2.207)
FT_LONG						0.009
						(0.241)
FT_LONG×FVA	+/-					0.358
						(1.342)
PT>2						-0.008
						(-0.327)
PT>2×FVA	+/-					0.189**
						(2.004)
VOLAT		-0.266	-0.262	-0.270	-0.292	-0.333
		(-1.205)	(-1.180)	(-1.223)	(-1.315)	(-1.497)
MTB		-0.001	0.001	0.001	-0.002	-0.001
		(-0.134)	(0.081)	(0.105)	(-0.204)	(-0.160)
SIZE		-0.021**	-0.024**	-0.024**	-0.022**	-0.022**
		(-2.155)	(-2.459)	(-2.504)	(-2.253)	(-2.137)
LOSS		-0.139***	-0.134***	-0.129***	-0.133***	-0.133***
		(-3.283)	(-3.152)	(-3.032)	(-3.102)	(-3.037)
GEARING		-0.111	-0.119	-0.117	-0.101	-0.123
		(-1.392)	(-1.493)	(-1.460)	(-1.252)	(-1.513)
INDEX		1.384*	1.353*	1.414*	1.475*	1.448*
		(1.729)	(1.690)	(1.764)	(1.827)	(1.762)
BDSIZE		0.018	0.017	0.018	0.022	0.031
		(0.340)	(0.314)	(0.334)	(0.412)	(0.564)
INDDIR		0.143**	0.150**	0.147**	0.139**	0.112*
		(2.422)	(2.538)	(2.490)	(2.330)	(1.857)
CEODUAL		-0.007	0.001	0.007	0.001	-0.035
		(-0.150)	(0.025)	(0.149)	(0.018)	(-0.704)
CEO_FY		-0.055	-0.061	-0.066	-0.063	-0.060
		(-1.301)	(-1.426)	(-1.553)	(-1.480)	(-1.392)

Year fixed effects	Yes	Yes	Yes	Yes	Yes
N	444	444	444	444	444
Adjusted R^2	0.288	0.284	0.286	0.285	0.294
F-stat	7.908	7.750	7.826	6.894	6.117

Note: Column (1) and (2) include interaction terms for industry specialist audit firms at the city level and national level, respectively. Column (3) adds an interaction term for audit partner industry specialisation. Column (4) presents the expanded version reflecting model (4.3). Column (4) includes both auditor tenure and industry specialisation measures. *, ** and *** represent significance levels of 0.10, 0.05 and 0.01, respectively (two-tailed). Variables are defined in Appendix A.

Table 4.5: Additional analysis based on sub-samples: Role of audit firm tenure and audit partner tenure

DEP=*RETURN*	Firm tenure			Partner tenure	
	(1)	(2)	(3)	(4)	(5)
	FT≤4	*4<FT≤11*	*FT>11*	*PT≤2*	*PT>2*
	(t-stat)	*(t-stat)*	*(t-stat)*	*(t-stat)*	*(t-stat)*
Intercept	-0.036	0.782*	-0.297	0.483	0.590**
	(-0.107)	(2.002)	(-0.869)	(1.566)	(2.575)
NI	0.067	0.336***	0.809*	0.047	0.177
	(0.444)	(3.066)	(2.021)	(0.483)	(1.291)
⊿NI	-0.020	0.060	-0.376**	0.112*	-0.109
	(-0.167)	(1.025)	(-2.622)	(1.753)	(-1.316)
FVA	0.098	0.464***	0.894***	0.126	0.304**
	(1.460)	(2.985)	(3.737)	(1.203)	(2.472)
VOLAT	-0.473	0.076	0.419	-0.185	-0.329
	(-0.956)	(0.173)	(0.646)	(-0.645)	(-0.579)
MTB	-0.006	0.002	-0.007	0.003	-0.001
	(-0.510)	(0.287)	(-0.064)	(0.420)	(-0.070)
SIZE	0.001	-0.038	0.008	-0.021	-0.035**
	(0.046)	(-1.519)	(0.655)	(-1.439)	(-2.288)
LOSS	-0.073	-0.083	0.261	-0.087	-0.197**
	(-0.875)	(-1.059)	(0.798)	(-1.211)	(-2.647)
GEARING	0.203	-0.238*	0.003	-0.166	-0.048
	(1.541)	(-1.968)	(0.018)	(-1.354)	(-0.464)
INDEX	2.264*	0.158	2.601	1.566*	0.490
	(1.707)	(0.207)	(0.858)	(1.769)	(0.687)
BDSIZE	-0.121	0.103	0.013	-0.009	0.065
	(-1.176)	(1.029)	(0.186)	(-0.137)	(0.827)
INDDIR	0.138	0.071	0.017	0.116	0.223***
	(1.055)	(1.151)	(0.186)	(1.594)	(2.906)
CEODUAL	-0.025	-0.068	-0.061	0.005	0.021
	(-0.161)	(-1.094)	(-0.725)	(0.043)	(0.235)
CEO_FY	-0.190*	-0.015	0.018	-0.119*	-0.009
	(-1.904)	(-0.335)	(0.198)	(-1.770)	(-0.161)
Year fixed effects	Yes	Yes	Yes	Yes	Yes
N	132	204	108	230	214
Adjusted R^2	0.191	0.428	0.238	0.273	0.337

Note: Table 4.5 reports the regression results for the sub-samples of short (Column 1), medium (Column 2), and long (Column 3) tenured audit firms and below-median (Column 4) and above-median (Column 5) tenure of audit partners separately, based on model (4.1). To correct for the correlated residuals, standard errors are clustered by firms. *, ** and *** represent significance levels of 0.10, 0.05 and 0.01, respectively (two-tailed). Variables are defined in Appendix A.

Table 4.6: Heckman two-stage regressions controlling for self-selection of auditors

Variables	First stage *DEP=AUDITOR_TENURE* *(t-stat)*	Second stage *DEP=RETURN* *(t-stat)*
Intercept	-2.922***	0.304
	(-2.833)	(1.262)
ROA	-0.120	
	(-0.132)	
LIQUIDITY	0.018	
	(0.551)	
CFO	0.407	
	(0.588)	
AUD_FEE	0.128*	
	(1.957)	
BIG4	-0.213	
	(-1.114)	
NI		0.100*
		(1.816)
ΔNI		-0.014
		(-0.541)
FVA		0.171**
		(2.355)
FT_MEDIUM		0.030
		(1.014)
FT_MEDIUM×FVA		0.256**
		(2.263)
FT_LONG		0.014
		(0.382)
FT_LONG×FVA		0.324
		(1.368)
PT>2		-0.008
		(0.313)
PT>2×FVA		0.190**
		(2.026)
VOLAT	1.943*	-0.184
	(1.920)	(-0.701)
MTB	-0.081**	-0.004
	(-2.119)	(-0.398)
SIZE	0.034	-0.020*
	(0.548)	(-1.817)
LOSS	-0.385	-0.147***
	(-1.613)	(-3.102)
GEARING	-0.450	-0.165*
	(-1.073)	(-1.906)
INDEX		0.979
		(1.061)
BDSIZE	0.607**	0.057
	(2.142)	(0.861)
INDDIR	-0.135	0.116*
	(-0.425)	(1.930)
CEODUAL	0.168	-0.017
	(0.630)	(-0.347)

CEO_FY	0.263	-0.047
	(1.110)	(-1.038)
IMR		0.107
		(0.890)
Year fixed effects	Yes	Yes
N	444	444
Adjusted R^2		0.296
F-stat		7.021

Note: Table 4.5 reports the results for Heckman two-stage regression. First stage results are reported in Column (1) and second stage results are reported in Columns (2). *, ** and *** represent significance levels of 0.10, 0.05 and 0.01, respectively (two-tailed). Variables are defined in Appendix A.

Figure 4.2: Industry specialist auditors by market share of audit fees by year

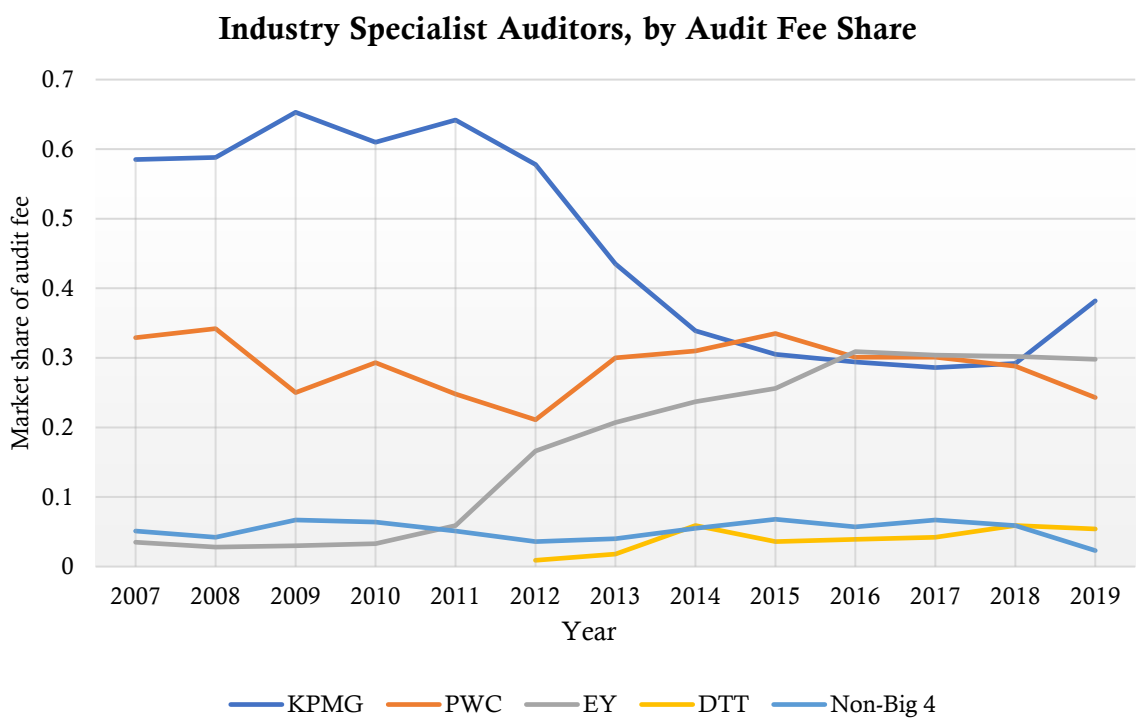


Table 4.7: Alternative measure of audit firm industry specialisation

DEP=RETURN	(1) City *(t-stat)*	(2) National *(t-stat)*
Intercept	0.436**	0.451**
	(2.313)	(2.435)
NI	0.103*	0.090
	(1.778)	(1.586)
ΔNI	0.010	-0.000
	(0.392)	(-0.015)
FVA	0.181***	0.206***
	(3.354)	(3.796)
C_HIGHFEE	-0.025	
	(-0.915)	
C_HIGHFEE × FVA	-0.033	
	(-0.276)	
N_HIGHFEE		-0.047*
		(-1.680)
N_HIGHFEE × FVA		-0.193
		(-1.618)
VOLAT	-0.260	-0.266
	(-1.176)	(-1.206)
MTB	0.002	0.003
	(0.216)	(0.344)
SIZE	-0.022**	-0.024**
	(-2.237)	-2.499
LOSS	-0.130***	-0.140***
	(-2.993)	(-3.254)
GEARING	-0.117	-0.119
	(-1.455)	(-1.487)
INDEX	1.379*	1.419*
	(1.726)	(1.786)
BDSIZE	0.013	0.024
	(0.245)	(0.452)
INDDIR	0.151**	0.157***
	(2.563)	(2.682)
CEODUAL	0.000	-0.004
	(0.006)	(-0.095)
CEO_FY	-0.060	-0.049
	(-1.410)	(-1.158)
Year fixed effects	Yes	Yes
N	444	444
Adjusted R^2	0.285	0.293
F-stat	7.798	8.057

Note: Table 4.7 reports the results for the audit fee-based (alternative) measure of audit firm industry specialisation at city level (Column 1) and at national level (Column 2). *, ** and *** represent significance levels of 0.10, 0.05 and 0.01, respectively (two-tailed). Variables are defined in Appendix A.

Table 4.8: Analysis excluding 2008 financial crisis period

DEP=RETURN	(1) Firm Tenure *(t-stat)*	(2) Partner Tenure *(t-stat)*
Intercept	0.482***	0.580***
	(2.687)	(3.256)
NI	0.107**	0.106**
	(2.018)	(2.022)
ΔNI	0.039	0.046*
	(1.453)	(1.782)
FVA	0.034	-0.035
	(0.563)	(-0.436)
Δ FVA	0.219***	0.254***
	(3.559)	(4.134)
FT_MEDIUM	0.035	
	(1.200)	
FT_MEDIUM×FVA	0.198*	
	(1.853)	
FT_LONG	0.012	
	(0.366)	
FT_LONG×FVA	0.194	
	(0.861)	
PT>2		-0.011
		(-0.453)
PT>2 ×FVA		0.193**
		(2.161)
VOLAT	-0.580**	-0.548**
	(-2.382)	(-2.270)
MTB	0.005	0.006
	(0.654)	(0.779)
SIZE	-0.020**	-0.026***
	(-2.115)	(-2.851)
LOSS	-0.147***	-0.162***
	(-3.497)	(-3.952)
GEARING	-0.173**	-0.179**
	(-2.231)	(-2.328)
INDEX	1.362*	1.579**
	(1.786)	(2.094)
BDSIZE	-0.016	0.006
	(-0.300)	(0.110)
INDDIR	0.115**	0.126**
	(2.019)	(2.231)
CEODUAL	-0.065	-0.057
	(-1.396)	(-1.232)
CEO_FY	-0.059	-0.063
	(-1.433)	(-1.537)
Year fixed effects	Yes	Yes
N	419	419
Adjusted R^2	0.237	0.240
F-stat	5.635	6.086

Note: Table 4.8 reports the regression results based on model (4.2) excluding the 2008 financial crisis period. *, ** and *** represent significance levels of 0.10, 0.05 and 0.01, respectively (two-tailed). Variables are defined in Appendix A.

Table 4.9: Moderating roles of audit firm rotation and partner rotation

DEP=RETURN	(1) *(t-stat)*
Intercept	0.488***
	(2.661)
NI	0.109**
	(1.996)
⊿NI	0.010
	(0.400)
FVA	0.200***
	(3.662)
FTΔPT	0.036
	(1.211)
FTΔPT×FVA	-0.275**
	(-2.109)
ΔFTΔPT	0.114*
	(1.901)
ΔFTΔPT×FVA	0.340
	(1.536)
VOLAT	-0.255
	(-1.164)
MTB	0.000
	(0.020)
SIZE	-0.028***
	(-2.932)
LOSS	-0.126***
	(-2.988)
GEARING	-0.126
	(-1.593)
INDEX	1.566*
	(1.939)
BDSIZE	0.031
	(0.585)
INDDIR	0.177***
	(2.978)
CEODUAL	0.010
	(0.203)
CEO_FY	-0.059
	(-1.407)
Year fixed effects	Yes
N	444
Adjusted R^2	0.298
F-stat	7.703

Note: Table 4.9 reports the regression results showing the impact of the audit firm and audit partner rotation on the perceived reporting quality of fair value adjustments. *, ** and *** represent significance levels of 0.10, 0.05 and 0.01, respectively (two-tailed). Variables are defined in Appendix A.

Table 4.10: Market valuation of upward fair value adjustments and the influence of audit firm tenure and audit partner tenure

DEP=RETURN	(1) FV Gain *(t-stat)*	(2) Firm Tenure *(t-stat)*	(3) Partner Tenure *(t-stat)*
Intercept	0.372**	0.405**	0.409**
	(2.055)	(2.215)	(2.291)
PREGAIN_NI	0.155***	0.158***	0.177***
	(3.174)	(3.235)	(3.656)
ΔNI	-0.004	-0.013	-0.033
	(-0.162)	(-0.487)	(-1.205)
FV_GAIN	0.274*	-0.187	-0.207
	(1.944)	(-0.762)	(-1.139)
FT_MEDIUM		-0.010	
		(-0.288)	
FT_MEDIUM×FV_GAIN		0.620**	
		(2.088)	
FT_LONG		-0.025	
		(-0.618)	
FT_LONG×FV_GAIN		0.798*	
		(1.792)	
PT>2			-0.070**
			(-2.454)
PT>2×FV_GAIN			1.076***
			(4.117)
VOLAT	-0.214	-0.282	-0.228
	(-0.973)	(-1.268)	(-1.053)
MTB	0.001	-0.000	0.003
	(0.116)	(-0.045)	(0.347)
SIZE	-0.019**	-0.019**	-0.021**
	(-1.984)	(-2.002)	(-2.265)
LOSS	-0.119***	-0.118***	-0.105**
	(-2.802)	(-2.741)	(-2.502)
GEARING	-0.112	-0.125	-0.134*
	(-1.412)	(-1.568)	(-1.712)
INDEX	1.227	1.261	1.636**
	(1.525)	(1.553)	(2.043)
BDSIZE	0.016	0.014	0.022
	(0.292)	(0.269)	(0.423)
INDDIR	0.145**	0.134**	0.139**
	(2.464)	(2.256)	(2.401)
CEODUAL	-0.001	-0.015	-0.011
	(-0.030)	(-0.319)	(-0.237)
CEO_FY	-0.057	-0.054	-0.050
	(-1.356)	(-1.273)	(-1.220)
Year fixed effects	Yes	Yes	Yes
N	444	444	444
Adjusted R^2	0.290	0.294	0.315
F-stat	8.541	7.583	8.826

Note: Table 4.10 reports the regression results showing the impact of auditor tenure on the perceived reporting quality of upward fair value adjustments. *, ** and *** represent significance levels of 0.10, 0.05 and 0.01, respectively (two-tailed). Variables are defined in Appendix A.

Table 4.11: Impact of engaging Big 4 auditors

DEP=RETURN	Big4 *(t-stat)*
Intercept	0.443**
	(2.327)
NI	0.110**
	(1.992)
ΔNI	0.012
	(0.452)
FVA	0.145**
	(2.421)
BIG 4	-0.005
	(-0.143)
BIG 4×FVA	0.104
	(1.038)
VOLAT	-0.254
	(-1.147)
MTB	0.001
	(0.084)
SIZE	-0.022**
	(-2.129)
LOSS	-0.127***
	(-2.957)
GEARING	-0.117
	(-1.460)
INDEX	1.288
	(1.603)
BDSIZE	0.015
	(0.274)
INDDIR	0.144**
	(2.424)
CEODUAL	0.000
	(0.007)
CEO_FY	-0.059
	(-1.401)
Year fixed effects	Yes
N	444
Adjusted R^2	0.286
F-stat	7.808

Note: Table 4.11 reports the regression results showing the impact of Big 4 auditors on the perceived reporting quality of fair value adjustments. *, ** and *** represent significance levels of 0.10, 0.05 and 0.01, respectively (two-tailed). Variables are defined in Appendix A.

CHAPTER FIVE:

RELEVANCE OF SUPPLEMENTARY FAIR VALUE DISCLOSURES UNDER MARKET UNCERTAINTY: EFFECTS ON AUDIT FEES & INVESTORS' PRICING

5.1 Introduction

The measurement uncertainty related to Level 3 fair value estimates has been a cause of concern for investors, auditors, regulators, and other financial reporting stakeholders. Market uncertainty exacerbates this measurement uncertainty. The IFRS Conceptual Framework views measurement uncertainty as impacting negatively both representational faithfulness and relevance of information and considers disclosures as a way to mitigate the uncertainty and enhance representational faithfulness and relevance (IASB, 2018, para. 2.22). Regulators echoed similar concerns regarding the measurement uncertainty associated with asset valuations during the COVID-19 pandemic. For example, the ASIC emphasised that supplementary disclosures would demonstrate the reasonableness of the asset values at the estimation point. ASIC Commissioner Cathie Armour is quoted as saying that "the quality of financial reports and related disclosures is more important than ever for investors and to maintain confident and informed markets" (ASIC, 2020).

The disclosure literature also highlights the role of discretionary disclosure in mitigating the "lemon problem" and restoring the confidence of auditors (Chen et al., 2019; Hong & Hwang, 2018; Yao et al., 2019) and investors (Francis et al., 2008; Healy & Palepu, 2001; Verrecchia, 2001; Weiss & Shon, 2017). The demand for

discretionary disclosures is greater when measurement uncertainties are involved, such as in the case of the Level 3 fair value estimates.

In this study, I examine the impacts of supplementary Level 3 fair value disclosures by Australian real estate firms on audit fees and investor pricing of fair value adjustments on investment properties during the COVID-19 pandemic in 2020. The COVID-19 pandemic provides an ideal setting for examining the role of supplementary disclosures in mitigating concerns about measurement uncertainty and the consequent concerns about representational faithfulness and the relevance of Level 3 fair value measurement during periods of economic uncertainty.

The Australian economy shrank during the 2020 COVID pandemic. People lost their jobs and businesses closed down. Economic outlook was uncertain. Real estate transactions slumped[29] and the market was affected negatively. Job losses resulted in reduced demands for rental property and increased the number of vacant rental properties (Reserve Bank of Australia, 2020). Job losses and business closures also created uncertainty about the collectability of rents from existing tenants.[30] All these developments resulted in a decline in market transaction data that are used as inputs to the fair value measurement of investment properties. The uncertainty is also likely to accentuate the estimation difficulties of the discount rate and the capitalisation rate, which are inputs to the fair value measurement of investment properties. Thus, the fair value measurement in 2020 was likely to be set with more uncertainty than in a period of normal economic activity. Likewise, I expect that the

[29] For example, in the metropolitan area of Melbourne, around 7,221 houses were sold in 2020, a significant drop from 2019 when around 49,777 houses were sold (Statista, 2020). Other sources also reveal a similarly significant drop in sales across Australia (e.g., CoreLogic, 2020).

[30] Responding to the unprecedented impact of the COVID-19 outbreak on the global real estate valuations, Australian states announced on April 2020 that the tenants of commercial and residential properties could effectively default on their rent without fear of landlords taking action to terminate leases (Martin, 2021).

role of supplementary disclosures in mitigating fair value measurement uncertainty would be more pronounced during the pandemic than in other normal periods.

The measurement uncertainty is highest for Level 3 fair values because these estimates rely on managerial discretion, use forward-looking assumptions and are complex to verify (Bratten et al., 2013). In particular, the reported changes in fair value estimates are highly subjective, as they likely reflect the impact of changing economic conditions and managers' private information (Linsmeier, 2011). Volatile economic circumstances due to an exogenous shock such as the COVID pandemic (Danielsson et al., 2020)[31] add an extra layer to the estimation risk of fair values, for at least two reasons. First, fewer transactions are observable in the market, making it difficult for the managers to precisely forecast valuation inputs. Second, the potential for the estimated asset valuation to change materially and unexpectedly is high. Accordingly, the fair value adjustments on Level 3 investment properties are highly subjective, and were especially so during the COVID-19 pandemic when real estate transactions plummeted.

Auditor task complexity increases with market uncertainty, as their service involves evaluating numerous subjective inputs, which may affect their audit fees. Prior studies (Ettredge et al., 2014; Goncharov et al., 2014; Sangchan et al., 2020) provide evidence that audit fees are an increasing function of Level 3 fair value assets but do not consider the role of supplementary fair value disclosures in audit fees. Consideration of supplementary fair value disclosures is important because, on the one hand, they facilitate audit risk assessment; on the other hand, they expose auditors to additional effort and reputational risk (audit risk effect) (Hong & Hwang, 2018; Yao et al., 2019). Chen et al. (2019) show that when the information risk is

[31] Danielsson et al. (2020) describe COVID-19 as exogenous to the economic system as it was caused by an external shock.

high, supplementary fair value disclosures serve as a signal of truthful reporting (signalling effect), mitigating the audit risk effect on audit fees. Extending this argument, I posit that auditors perceive a lower risk of verifying complex Level 3 properties when managers provide more supplementary fair value disclosures, and market uncertainty during 2020 heightened this perception.

The increased estimation risk also enhances the likelihood of private information (Vanza et al., 2018) and investors' faithful representational concerns, which may lead to a pricing discount on Level 3 fair value estimates (Goh et al., 2015; Song et al., 2010). Managers make supplementary disclosures to enhance the quality of existing disclosure and their reliability, with the ultimate objective of increasing investors' confidence in fair value measurements (Bagnoli & Watts, 2007; Bryan, 1997; Chung et al., 2017; Francis et al., 2002). Chung et al. (2017) find that additional disclosures increase Level 3 financial assets' market pricing and reduce the information risk. The informational role of disclosure on fair value estimates is expected to be prominent during market volatility (Boone et al., 2020; Kim & Park, 2009).

In this study, I utilise the market uncertainty of 2020 arising due to the COVID pandemic and the Level 3 fair value measurements of investment properties to investigate three research questions. First, do firms provide more supplementary fair value disclosures[32] for Level 3 investment properties during the market uncertainty of 2020? Second, are audit fees negatively associated with supplementary fair value disclosures and is this association more pronounced during 2020? Third, do supplementary fair value disclosures influence investor pricing of fair value

[32] For Level 3 fair values, while *IFRS 13* sets out the minimum disclosure requirements, it leaves room for managerial discretion in deciding on the details and additional disclosures (para. 93). Managers often make disclosures beyond the minimum specified, expecting that this would mitigate users' faithful representational concerns about fair value estimates (Chung et al., 2017). I refer to these measurement-related disclosures beyond the minimum required on Level 3 fair value estimates as 'supplementary disclosures'.

adjustments on investment properties differently during the uncertainty of 2020 relative to the pre- uncertainty period (2018–2019)?

This study focuses on the real estate sector in Australia to investigate the research questions because, as noted above, the fair value adjustment on investment property is a Level 3 measurement (Sundgren et al., 2018), and the pandemic made the representationally faithful estimation of fair value inputs more difficult than during normal economic periods. Also, Level 3 investment properties constitute a substantial proportion of the total assets (e.g., on average 70 percent of total assets), and yearly fair value adjustments on these properties are material and directly affect net income (e.g., on average, fair value adjustments constitute 33 percent of the earnings before tax). The economic consequences of the estimation errors are likely to be significant. Hence, the disclosures relating to fair value measurements are critical to the auditors and the capital market participants in the real estate setting. Moreover, the Australian setting is interesting because anecdotal evidence indicates that disclosures on fair value of investment properties might have increased in Australia during 2020 (CAANZ, 2020).[33]

Based on a sample of 153 firm-years, I first document that the supplementary disclosures on the Level 3 investment properties increased significantly during the uncertainty of 2020 relative to 2019 and 2018. Content analysis reveals that the additional disclosures primarily relate to the sensitivity analysis of fair value measurements, the name of the independent valuer and the valuation date. Second, I find that the supplementary disclosures are negatively associated with audit fees. This indicates that supplementary fair value disclosures on investment properties have a signalling effect and lower perceived audit risk, leading to lower audit fees.

[33] The recent emphasis on enhanced disclosures by the ASIC for complex accounting estimates to mitigate estimation risk in the rapidly changing market (CAANZ, 2020) motivates this expectation.

An interesting additional finding is that auditors perceive the disclosure of the independent valuer's name to be most relevant to audit pricing. Contrary to expectation, I find no incremental signalling effect during the uncertainty of 2020.

Finally, I provide evidence that the supplementary disclosure increased the value relevance of fair value adjustments during 2020, but in the pre-uncertainty period it had no significant valuation implication. Additional analysis reveals that one disclosure item accounts for the enhanced value relevance of these disclosures during 2020: the name of the independent valuer.

In the wake of COVID in 2020, there were severe concerns from preparers, managers and auditors that the asset valuation estimated during distressed market conditions might be questioned by users later on (CAANZ, 2020, p.7). Responding to this, ASIC declared that the risk of being found deceptive is minimal if preparers provide sufficient disclosures (CAANZ, 2020). The results suggest that real estate firms considered the potential negative impact of the acute market uncertainty during the COVID-19 pandemic on the representational faithfulness and relevance of fair value adjustments and enhanced fair value disclosures, which mitigated the perceived audit risk and investors' concerns about the representational faithfulness and relevance of fair value adjustments. The results are, therefore, of interest to standard setters, regulators, and other financial reporting stakeholders.

Prior research examines the exposure to fair values as a determinant of audit fees (Ettredge et al., 2014; Hong & Hwang, 2018; Yao et al., 2015). The findings of this study extend this literature by examining the role of supplementary fair value disclosures as a determinant of audit fees. The finding that audit fees are negatively associated with supplementary Level 3 fair value disclosures indicates that these disclosures attenuate perceived audit risk. The results also contribute to the ongoing debate on the usefulness of additional disclosures on Level 3 fair value estimates

(Chung et al., 2017; Vergauwe & Gaeremynck, 2018; Weiss & Shon, 2017). Contrary to Vergauwe and Gaeremynck's (2018) study, which concludes that investors did not incorporate the extended measurement-related disclosures on fair values into their decision during the 2008 GFC, I provide evidence of incremental informational benefit to investors stemming from the availability of supplementary fair value disclosures during the market uncertainty of 2020. Moreover, item-wise analysis of the supplemental disclosure index reveals demand for disclosure about the independent valuers involved in the valuation process from both auditors and investors. Interestingly, prior studies on the relevance of supplementary fair value disclosures did not consider this potentially critical item.

This study proceeds as follows. In the next section, I discuss how the market uncertainty of 2020 during COVID pandemic is likely to have increased the estimation risk of Level 3 investment properties. Section 5.3 discusses the related literature on fair value disclosures, audit fees and market valuation of fair values and develops the hypotheses. Section 5.4 addresses sample selection, the construction of the disclosure index and the empirical models. Section 5.5 presents the main results and additional analyses. Section 5.6 concludes.

5.2 Background

5.2.1 Market uncertainty of 2020 and estimation risk on Level 3 investment property

Fair value represents the present value of expected future cash flows, and the changes in fair values reflect the impact of changing economic conditions on a firm (Linsmeier, 2011). Managers estimate Level 3 fair values based on assumptions that market participants would use, reflecting market conditions as of the measurement date. Since property values can fluctuate significantly in the short term, especially

when the economy experiences an unexpected shock, it becomes challenging for managers to ensure that the recognised amount represents the fair value faithfully.

Typically, the fair value of Level 3 investment properties is calculated using (i) the discounted cash flow method (i.e., discounting nominal future cashflows to estimate fair value), and (ii) the capitalisation approach (i.e., estimating the expected income projections of the property and applying a capitalisation rate into perpetuity) (EY, 2019, p. 22).[34] The riskier the cashflows, the higher the discount rates/yields, resulting in lower property values. Even small shifts in these key metrics have a material impact on the valuation.

While these estimates are subjective, the pandemic accentuates the estimation difficulty and creates concerns about the representational faithfulness of fair value measurements. PwC (2020) report three key reasons explaining why the market volatility during the COVID-19 crisis affected the core valuation inputs: (i) uncertain net cash flows due to the delays and non-collection of rental income, unexpected vacancy and challenges regarding lease contract extensions; (ii) an adverse shift in real estate market liquidity and volatile property values; (iii) disruption impacts due to industry-wide issues (e.g., structural changes in the market, changes in lessor and lessee rights during pandemic, etc.).

To enhance the credibility of financial reporting amid the uncertain environment, ASIC identified five focus areas,[35] the fair value of assets being one of them, and emphasised documentation and disclosure on unobservable inputs. The Royal Institution of Chartered Surveyors (RICS) issued a *Valuation Practice Alert*

[34] The EY (2019) IFRS real estate survey reports that the discounted cashflow method is applied by most entities (81 percent), followed by the income capitalisation method (72 percent) and the direct method (37 percent).

[35] For reporting periods ending 30 June 2021 under COVID-19 conditions, ASIC expects directors, preparers of financial reports and auditors to pay attention to the following key areas: (i) asset values; (ii) provisions; (iii) solvency and going concern assessments; (iv) events occurring after year end and before the completion of the financial report; and (v) disclosures in the financial report and the operating and financial review (ASIC, 2020).

providing expert guidance on declaring 'material valuation uncertainty' by valuers (RICS, 2020). The expectation is that the supplementary disclosure and the disclaimer would make users of financial statements consider the market conditions and assess whether managers are acting upon the latest and most accurate information. The main purpose is to limit the perceived estimation risk and sustain trust among investors. However, it is an open empirical question whether these disclosures mitigate concerns about the representational faithfulness and the consequent relevance of fair value measures.

5.2.2 Direction of changes in fair values: 2008 GFC versus 2020 uncertainty

Observation of the direction of adjustments made to the fair value of investment properties over the period 2007–2020 provides evidence that the impact of market uncertainty during 2020 due to COVID is a different experience for the real estate sector from 2008 GFC. Figure 5.1 depicts that while, in 2007, the mean of unrealised gains and losses on investment properties was around 7 percent of the pre-adjusted total asset values, in 2008, the ratio dropped sharply to 0.40 percent. During 2009, on average, real estate firms reported unrealised losses of 5.42 percent on investment properties. However, compared to 2019, there is a drop (increase) of merely 0.22 percent in the reporting of unrealised gains (losses) in 2020, i.e., from 1.19 percent to 0.97 percent.

One potential reason for this reduced effect on the property market is that the GFC was endogenous to the economic system, i.e., created from within the economic system due to poor economic management, while COVID-19 is exogenous to the economic system, i.e., caused by an external shock (Danielsson et al., 2020). This means that, in contrast to the GFC, under COVID-19, the economic system was not flawed and could absorb the shock. Another reason may be that the implementation

of timely initiatives in 2020 to stabilise the Australian property sector, such as the *COVID-19 Commercial Leasing Code of Conduct*,[36] the interest deferral option,[37] the Australian Government's financial stimulus packages, etc., none of which were offered during the GFC crisis (Properties & Pathways [P&P], n.d.b). Furthermore, the interest rate environment was materially more conducive to property investment in 2020 compared to the 2008 crisis (PwC, 2020).

Figure 5.1 about here

5.3 Literature Review and Hypothesis Development

5.3.1 Effect of market uncertainty on supplementary disclosures

Macroeconomic events in recent times have fuelled research on the impact of market uncertainty on a firm's disclosure behaviour (Kim & Park, 2009; Krause et al., 2017). Disclosure models predict at least two potential benefits of supplementary disclosures. First, it mitigates the adverse selection problem by reducing information asymmetry, triggers greater liquidity, and lowers the cost of capital (Diamond & Verrecchia, 1991; Francis et al., 2008; Glosten & Milgrom, 1985). Second, it helps correct firm mis-valuation (Healy et al., 1999). Economic theory suggests that managers provide supplementary disclosures to avoid the discounting of firm value resulting from information asymmetries (Akerlof, 1970; Grossman, 1981). The underlying assumption is that rational market participants interpret non-disclosure as unfavourable news and discount the asset value of the firm. Consistent with this view, recent works find that during periods of uncertainty, managers tend to make more discretionary disclosures (Adelopo et al., 2021; Amore, 2020; Nagar et al., 2019).

[36] Formal guidelines for how tenants and landlords should behave during the pandemic period. See *COVID19 Impact on Commercial Property Leases* (P& P, n.d.a).

[37] Property owners can defer mortgage repayments for up to six months.

In the case of Australian real estate firms, I expect that supplementary disclosures by the managers are likely to increase due to the emphasis on enhanced disclosure by regulatory bodies during the uncertainty of 2020. ASIC encouraged enhanced disclosures on complex accounting estimates to reduce estimation risk in the rapidly changing market (CAANZ, 2020). It declared that the risk of being found deceptive is minimal if preparers disclose what information is available at the time of the estimate, demonstrate why it is a reasonable estimate and comply with continuous disclosure obligations (CAANZ, 2020, p. 7). Other regulatory bodies specific to the real estate sector in Australia further emphasised this. For example, RICS issued a statement advising adding a 'material uncertainty clause' to valuation reports to alert users about the market circumstances at the valuation date (RICS, 2020). The continuous emphasis from the regulatory authorities is likely to motivate managers to disclose additional information, not only to reduce measurement uncertainty or increase investors' confidence but also to avoid any unintended consequences arising due to non-disclosure. These reasonings leads to the first hypothesis:

$\boldsymbol{H_{5.1}}$***:*** *Firms are likely to provide more supplementary disclosures for Level 3 investment properties during the market uncertainty period relative to the pre-uncertainty period.*

5.3.2 Supplementary disclosures and audit fees

The risk inherent in an audit engagement is a critical driver of audit fees (Charles et al., 2010; Hay et al., 2006). Prior studies also document a positive relationship between earnings management risk and audit fees (Bedard & Johnstone, 2004; Gul et al., 2003). The underlying argument is that a higher inherent risk exposes the auditor to a higher risk of material misstatement and requires the auditor to perform

additional audit procedures to reduce the audit risk to an acceptable level, resulting in higher audit fees.

In the context of the fair value of investment properties, the extant literature examines the association between exposure to Level 3 fair values and audit fees. Goncharov et al. (2014) show that although auditors charge lower fees for fair value properties than properties valued at historical costs, audit fees increase with the increase in exposure to Level 3 fair value estimates. This is consistent with the enhanced audit effort due to the complexity in verifying asset values. Ettredge et al. (2014) report similar findings for the fair value of financial assets.

In contrast to studies that have examined the exposure to Level 3 fair values as a potential determinant of audit fees, this study considers auditors' responses to firms' supplementary FV disclosures. On the one hand, auditors may increase audit fees to compensate for the additional time they spend on auditing the extended information or the possible reputational and litigation losses they assume for potentially misleading disclosures, known as the audit risk effect (Gillan & Panasian, 2014; Seetharaman et al., 2002). Consistent with this view, Hong and Hwang (2018) provide evidence that expanded disclosure requirements on the fair value of pension assets add to the auditor workload and audit efforts because of the exposure to higher litigation risk and lead to higher audit fees. Chen et al. (2019) show that auditors charge higher audit fees for firms with goodwill-related fair value disclosures due to the greater litigation risk associated with such disclosures.

On the other hand, supplementary disclosure may signal strength of internal controls, management integrity and increased firm transparency, alleviating the auditors' concerns around the opacity of fair value measurements and the potential for self-serving motives, referred to as the signalling effect (Yao et al., 2019). Auditors are less concerned about the earnings manipulation using fair value adjustments

because an additional disclosure lends verifiability to the numbers' breakdown in the financial statements increasing the cost of opportunism. Chen et al. (2019) show that when information asymmetry or investor scrutiny is higher, auditors perceive fair value disclosures as a signal of truthful reporting. They provide evidence that under an uncertain environment, the signalling effect offsets the audit risk effect.

A recent study by Sangchan et al. (2020) examines the impact of the fair value of investment properties on audit fees using the Australian real estate context. They report that exposure to Level 3 fair values has no association with audit fees and argue that using Level 3 inputs is more of an industry norm, and auditors do not perceive them as possessing marginal risk. One limitation of their study is that it ignores the impact of fair value disclosures. In other words, they test the audit risk effect without controlling for disclosures. In this study, I argue that, given the high estimation risk on Level 3 properties, enhanced disclosures by real estate firms would mitigate the audit risk effect (Chen et al., 2019; Yao et al., 2019). Auditors are likely to reduce the audit fee to reflect the resultant reduction in audit risk. I further posit that this negative association between the supplementary disclosures and audit fees would be more pronounced during 2020 due to the volatile market condition and uncertain information environment. This leads me to the following hypotheses:

$\boldsymbol{H_{5.2a}}$***:*** *Supplementary Level 3 fair value disclosures for investment properties are negatively associated with audit fees.*

$\boldsymbol{H_{5.2b}}$***:*** *The negative association between supplementary fair value disclosures and audit fees is more pronounced during the market uncertainty period.*

5.3.3 Supplementary disclosures and market pricing of Level 3 fair values

In the context of investment properties, existing research suggests that fair value amounts (e.g., revaluation gains) are relevant for future financial outcomes, and

investors place positive valuation weights on the fair value estimates. For a sample of Canadian Real estate firms, Bandyopadhyay et al. (2017) find that fair value adjustments are positively associated with future cumulative cash flows and concurrent stock price. Israeli (2015), using a European real estate sample, documents a positive association between fair value amounts and share price, stock return, and one and two years-ahead changes in net rental income. Müller et al. (2015) also report similar findings.

Regarding the informational role of additional measurement-related disclosures on fair values, two recent studies examine disclosures on financial assets using the US banking context. Chung et al. (2017) find that banks voluntarily provide supplementary disclosures for more opaque financial assets to enhance credibility and that the provision of supplementary disclosures increases market pricing and reduces the information risk of Level 3 estimates. On the contrary, Weiss and Shon (2017) show that voluntary fair value disclosures do not unambiguously decrease information asymmetries. They find no evidence that positive or negative disclosures reduce information asymmetry, suggesting that market participants view such disclosures as lacking credibility. Their evidence further indicates that complex fair value disclosures and disclosures in uncertain and litigious tones increase information asymmetry.

Studies that focus on the role of disclosures on investment property fair values document investors do not use additional disclosures on property valuation. For instance, Sundgren et al. (2018) show that post-IFRS 13 adoption, real estate firms in Europe disclose more on property valuation, but additional disclosure has no positive influence on analyst coverage and market liquidity. For European real estate firms, Vergauwe and Gaeremynck (2018) report a negative association between disclosure and the bid-ask spread, providing limited evidence that measurement-

related fair value disclosures reduce information asymmetry. Nonetheless, the authors find no impact of supplementary disclosures on the proportion of zero return days and the price, indicating that disclosures lack informativeness.

This study differs from Vergauwe and Gaeremynck (2018) and Sundgren et al. (2018) in two respects. First, the former study focuses on the 2008 crisis when the property market was overly illiquid, and IFRS 13 was yet to be implemented. The latter covers the post-GFC period from 2009 to 2014, comparing pre- and post-IFRS 13 adoption periods. In this study, I examine the valuation implication of disclosure during 2020 and the pre-uncertainty period of 2018–2019 separately, arguing that, because of investor demand and regulatory push, supplementary disclosures may increase in times of market uncertainty, potentially resulting in more pronounced price impacts of such disclosures. Second, compared to prior studies, I focus on a different set of fair value-related disclosures. Prior studies focus on the valuation inputs (e.g., occupancy rate, rental growth, capitalisation rate, discount rate) in their disclosure indices. In contrast, this study focuses on supplementary valuation-related disclosures deemed important by the regulatory bodies (e.g., ASIC, RICS) during the 2020 uncertainty, such as the date at which valuation took place, quantitative analysis of sensitivity, and so on.

To the extent that supplementary disclosures are informative and perceived as credible evidence of the reasonableness of managerial assumptions in the distressed market environment, these disclosures are likely to mitigate the faithful representation concerns of investors, leading to a greater valuation multiple. I, therefore, predict:

$\boldsymbol{H_{5.3}}$***:*** *Supplementary Level 3 fair value disclosures are positively associated with the investor pricing of fair value adjustments to investment properties during the market uncertainty period.*

5.4. Sample and Research Design

5.4.1 Sample

This study spans the period 2018–2020, covering all the real estate firms listed as 'Real Estate' in the ASX. I started (Table 5.1) with the 78 ASX real estate firms as of 16 June 2019. To focus the analysis on the fair value disclosures for investment properties, I excluded four firms that did not adopt the fair value model of IAS 40 during the sample period, twenty firms that had no investment property reported in the statement of financial position, and three firms that were delisted during 2019-20 because annual reports were not available for 2020. This sample selection process results in a final sample of 51 real estate firms with 153 firm-years.

I collected market and accounting data from Eikon, and ownership and some governance variables from Osiris. I hand-collected all the investment-property-related amounts, fair value disclosures on investment properties, auditor remuneration and the remaining governance variables[38] from annual reports.

Table 5.1 about here

5.4.2 Disclosure contents – Level 3 property valuation

I begin by capturing the shift in the word count of footnote disclosures on investment properties from the annual reports of the sample firms. I observe a substantial increase in disclosure length in 2020 relative to the pre-uncertainty period. The average word count in the footnote increased by 20 percent, suggesting that uncertainty during 2020 enhanced the quantity of overall disclosure on investment properties (Table 5.2).

[38] The hand-collected governance variables include the number of female board members, the frequency of audit committee meetings, whether at least one audit committee member is a professional accountant, whether the firm has a risk committee, what percentage of independent board members have real estate expertise, and what percentage of audit committee members have real estate expertise.

Table 5.2 about here

I turn to content analysis in Table 5.3, which classifies the disclosure items into three categories, and reports the average number of firms providing these by year. IFRS 13 specifies disclosure objectives for fair value-related disclosures and identifies a list of minimum items that the IASB believes will achieve the objectives. Panel A lists the six disclosure items specified by IFRS 13 for Level 3 fair value estimates. While IFRS 13 designates these as the minimum disclosures that firms must make, managers have some discretion on whether to disclose a specific item and how much information to disclose. If managers consider an item immaterial, they need not disclose that item. Further, IFRS 13 is not very prescriptive as to exactly what information to disclose.[39] For example, IFRS 13.93(g) requires that a description of the Level 3 fair value valuation processes be provided but does not specify any particular aspect of those processes. The majority of the sample firms (80 percent) disclose who the valuer is (e.g., managers, or external, or both) and at what intervals they revalue. Around 55 percent of sample firms disclose what proportion of valuation is done by the independent valuers. Few discussed whether there is any specific authority within the firm to oversee the finalisation of valuation (about 8 percent) and the process of internal tolerance check (about 4 percent). For these six IFRS disclosure items, I observe no major change in the disclosure percentages across 2018–2020, except for one, i.e., the description of the sensitivity of the fair value measurements to changes in unobservable inputs, which is 71 percent in 2018 versus 88 percent in 2020.

On Panel B, I identify four supplementary disclosure items that real estate firms disclosed. IFRS 13 does not explicitly specify these items. I observe a significant

[39] IFRS 13 adopts this approach because it specifies disclosure objectives for fair value-related disclosures and requires managers to disclose items that they consider will achieve the objectives (IASB, 2011)

increase in the percentage of firms that disclosed two of these four supplementary items over the period. For example, the percentage of firms disclosing a quantitative sensitivity analysis increased from 6 percent in 2019 to 51 percent in 2020. I find a similarly significant increase (i.e., from 37 percent in 2019 to 65 percent in 2020) in the percentage of firms disclosing the overall date/time frame of valuation. One plausible reason for the increase in supplementary disclosures could be the emphasis by regulators on the disclosure of this information in the wake of COVID-19 uncertainty. Panel C shows that while around 69 percent of the real estate firms briefly mentioned COVID uncertainty in the investment property footnote in 2020, about 39 percent provided more detail on the COVID considerations for property valuations. Appendix B of the thesis provides illustrative examples from notes to the financial statements for each of the three categories of disclosure items presented in Panel A, B and C.

Table 5.3 about here

Overall, the evidence in Table 5.3 suggests that the jump in disclosure quantity during 2020 was predominantly due to the supplementary disclosures made by the real estate firms, presumably because managers intended to minimise the measurement uncertainty of Level 3 properties and enhance investors' confidence at this volatile time.

5.4.3 Construction of the composite disclosure score

I construct the disclosure index by focusing on the four supplementary disclosure items: (i) quantitative sensitivity analysis (*SENSITIVITY*); (ii) name of the independent valuer entity (*INDEPENDENT*); (iii) date of valuation for individual property/property class (*DATE*); and (iv) quantitative disclosure of unobservable input for each property (*INPUT*).

I focused on supplementary disclosures because both ASIC and RICS emphasised the need for additional disclosures on accounting estimates during the 2020 market uncertainty. I compiled the list of supplementary disclosures based on the IASB constituent feedback, comments by an industry organisation (e.g., RICS), survey of the academic literature and survey of annual reports. For example, although IFRS 13 mandates the disclosure of narrative sensitivity information, during the PIR of IFRS 13, several respondents stated that quantitative analysis (*SENSITIVITY*) could be useful because it would provide a clear understanding of the interrelationship between inputs (IASB Staff, 2018). Prior studies (Cotter & Richardson, 2002; Dietrich et al., 2000) show that external appraisals are important in their effect on how the market perceives the valuation of non-financial assets. Disclosing the name of the entity carrying out the valuation (*INDEPENDENT*) could add an extra layer of credibility to the valuations.

Further, during the 2020 market uncertainty, the RICS emphasised disclosing the property valuation date (*DATE*) because the volatile market causes property values to fluctuate significantly in the short term. The disclosure of valuation date may alleviate uncertainty by indicating the market context under which the valuation opinion is prepared (RICS, 2020) and justify the reasonableness of the assumptions and inputs used. Moreover, although IFRS 13.93(d) requires the disclosure of quantitative information about significant unobservable inputs, the PIR of IFRS 13 highlighted that if these are of an aggregate nature, they may not be very useful (IASB Staff, 2018). The IASB constituents argued that a property-specific inputs (*INPUT*) disclosure is useful as it allows users to understand the judgements made by managers for each property, which are not publicly available.

I assign 1 point for a disclosure item if that item is disclosed in the annual report and 0 otherwise. I then construct the disclosure index based on these four items

using two measures: the Saidin index (*SAIDIN*) (Devalle et al., 2016; Hodgdon et al., 2008) and the unweighted disclosure score (*DISC*) (Mazzi et al., 2017).[40] The Saidin index is developed by assigning weight to items, not based on the importance attributed by the researchers but by the importance attributed by the firms (Devalle et al., 2016). The underlying assumption is that the more a piece of information is disclosed by firms, the less its weight must be in the index. I use the Saidin index for two reasons. First, this measure is consistent with the concept of materiality (Mazzi et al., 2017). Preparers may disclose less when the disclosure is subject to higher proprietary costs and vice versa. Hence, giving a higher weight to less frequently disclosed items and a lower weight to more frequently disclosed items is justified. Second, the index treats all sample firms as a homogenous group. Since the sample firms are from the same sector and the same country, are listed on the ASX, and make disclosures as per IFRS requirements, they form a homogeneous group. The second measure, *DISC*, is the ratio of the total items disclosed to the maximum possible score for each firm.

Table 5.4 Panel A shows that the most frequently disclosed item in the supplementary index is the valuation date for the individual property classes, disclosed in 39 percent of firm-years. The least frequently disclosed item is the quantitative disclosure of unobservable inputs for individual properties, with the item disclosed in 20 percent of firm-years. Panel B shows that the disclosure of quantitative sensitivity analysis experienced the largest increase, from a mean of 0.06 in 2019 to a mean of 0.51 in 2020. In contrast, the disclosure of unobservable inputs for individual properties remained static at a mean of 0.20 over 2018–2020. Panel C

[40] To ensure the validity of the scores, I carried out a preliminary pilot study on eight randomly selected sample firms by scoring each independently and then comparing the score with a peer researcher. Using a Mann–Whitney test, the difference in the compliance scores calculated independently was not statistically significant. This process enabled me to ensure reliable scoring for all the firms in the sample.

shows that the mean weighted disclosure score (*SAIDIN*) was stable during 2018-19 (0.22 in 2018 and 0.21 in 2019) but soared to 0.34 in 2020. The unweighted score (*DISC*) reveals a similar pattern of change during the period.

Table 5.4 about here

5.4.4 Model specifications

Test of $H_{5.1}$

I test $H_{5.1}$ using panel regressions based on the following model:

$$Supl\_DScore_{it} = \beta_0 + \beta_1\, MU2020_{it} + \beta_2\, ROE_{it} + \beta_3\, LnTA_{it} + \beta_4\, VOLAT_{it} + \beta_5\, LEV_{it} + \beta_6\, FVIP\%_{it} + \beta_7\, BIG4_{it} + \beta_8\, BDSIZE_{it} + \beta_9 INDDIR_{it} + \beta_{10}\, REXP\_AUD_{it} + \beta_{11} INSTITUTE_{it} + \beta_{12}\, REIT_{it} + \sum_k \beta_k\, IP\_TYPE_{it} + Year\ fixed\ effects + \varepsilon_{it} \quad (5.1)$$

Supl_DScore is the supplementary disclosure score captured by *SAIDIN* and *DISC*. To test whether real estate managers increase supplementary disclosures due to the uncertainty during 2020 ($H_{5.1}$), I include an indicator market uncertainty variable, i.e., *MU2020,* as the test variable; thus, the main coefficient of interest is β_1. I expect a significantly positive coefficient, indicating that supplementary disclosure increased during the 2020 uncertainty.

I control for the factors that might influence the quantity of supplementary disclosures (Chung et al., 2017; Israeli, 2015; Sundgren et al., 2018). As a control for firm profitability, firm size, possible effects of risk, and gearing, I include the following variables in model (5.1) respectively: (i) *ROE* is the return on equity, calculated as the net income before interest and taxes divided by average common equity; (ii) *LnTA* is the natural logarithm of firm's total assets and controls for firm size (iii) *VOLAT* is the volatility of returns, calculated as the standard deviation of monthly returns; (iv) *LEV* is the total debt to asset ratio. *FVIP%* is the fair value of investment properties scaled by total assets and controls for the possible influence of

the materiality of investment properties. To control for the impact of corporate governance on disclosure, I incorporate five governance variables in the model: *BIG4* is an indicator variable that takes a value of 1 if the auditor is a Big 4; *BDSIZE* is the natural logarithm of the number of board members; *INDDIR* is the ratio of total independent directors to total directors; *REXP_AUD* is the ratio of audit committee members with real estate expertise to total members in the committee. I also control for the nature of the business and investment property types. *REIT* takes 1 if the real estate is a trust and 0 otherwise; *IP_TYPE* represents the percentage of each investment property type to total fair value of investment properties of firm *i* at period *t*. I consider 10 categories of investment properties such as industrial, retail, office, residential, hotels, logistics, properties under development, agricultural, retirement living and others.

Test of $H_{5.2}$

I use the standard audit fee model (Chen et al., 2019; Craswell & Francis, 1999; Simunic, 1980) with the inclusion of *Supl_DScore* in model (5.2) to test $H_{5.2a}$ and the interaction term, *MU2020*× *Supl_DScore,* in model (5.3) to test $H_{5.2b}$. I run panel regressions using the following models:

$$AUD\_FEE_{it}=\beta_0+\beta_1\ Supl\_DScore_{\ it}+\beta_2\ LnFVIP_{it}+\beta_3\ ROA_{it}+\beta_4\ LnTA_{it}+\ \beta_5\ LEV_{it}+\ \beta_6\ MTB_{it}+\beta_7\ LIQUIDITY_{it}\ +\beta_8\ SEGMENT_{it}+\beta_9\ LnSUB_{it}+\beta_{10}FOREIGN_{it}+\beta_{11}\ LOSS_{it}+\beta_{12}\ BIG4_{it}\ +\beta_{13}\ INITIAL_{it}+\beta_{14}\ YEND_{it}+\beta_{15}\ OPINION_{it}+\beta_{16}INDDIR_{it}+\beta_{17}\ REIT_{it}\ +\sum_k\beta_k\ IP\_TYPE_{it}+Year\ fixed\ effects\ +\varepsilon_{it} \quad (5.2)$$

$$AUD\_FEE_{it}=\beta_0+\beta_1\ Supl\_DScore_{\ it}+\beta_2\ MU2020_{it}+\beta_3\ MU2020_{it}\times\ Supl\_DScore_{\ it}+\beta_4\ LnFVIP_{it}+\beta_5\ ROA_{it}+\beta_6\ LnTA_{it}+\ \beta_7\ LEV_{it}+\ \beta_8\ MTB_{it}+\beta_9\ LIQUIDITY_{it}\ +\beta_{10}\ SEGMENT_{it}+\beta_{11}\ LnSUB_{it}+\beta_{12}FOREIGN_{it}+\beta_{13}\ LOSS_{it}+\beta_{14}\ BIG4_{it}\ +\beta_{15}\ INITIAL_{it}+\beta_{16}\ YEND_{it}+\beta_{17}\ OPINION_{it}+\ \beta_{18}INDDIR_{it}+\beta_{19}\ REIT_{it}\ +\sum_k\beta_k\ IP\_TYPE_{it}+\ Year\ fixed\ effects\ +\varepsilon_{it} \quad (5.3)$$

The dependent variable in models (5.2) and (5.3) is AUD_FEE, which is the natural logarithm of total audit fees. The primary variable of interest for $H_{5.2a}$ *Supl_DScore* in model (5.2) and for $H_{5.2b}$ is *MU2020*×*Supl_DScore* in model (5.3). A negative coefficient estimate on model (5.2) is consistent with the prediction in H_{2a} and suggests that auditors perceive a lower audit risk when managers make more supplementary disclosures. Furthermore, I expect the coefficient on model (5.3) to be significantly negative to support the notion that the negative association between supplementary disclosures and audit fee is more pronounced during the pandemic ($H_{5.2b}$).

I control for audit fee determinants drawn from prior literature (Chen et al., 2019; Craswell & Francis, 1999; Dickins et al., 2008; Simunic, 1980): return on assets (*ROA*), firm size (*LnTA*), debt to asset (*LEV*), market-to-book ratio (*MTB*), current ratio (*LIQUIDITY*), number of business segments (*SEGMENT*), number of subsidiaries (*LnSUB*), the proportion of subsidiaries that are foreign (*FOREIGN*), incidence of losses (*LOSS*), Big 4 auditor (*BIG4*), changes in audit firm (*INITIAL*), the June year-end (*YEND*), and modified opinion (*OPINION*). I also include board independence (*INDDIR*), the nature of the business (*REIT*) and the type of investment properties (*IP_TYPE*). All variables are formally defined in Appendix A.

Test of $H_{5.3}$

I use the modified Ohlson (1995) model to examine the pricing effect of supplementary disclosures (Aboody et al., 1999; Barth et al., 1996; Song et al., 2010). In model (5.4), which is the base model, $PRICE$ is the closing share price on the announcement date of firm's annual report. I decompose the earnings into current periods fair value adjustments (FVA_P) and earnings before fair value adjustments (*NI_P*) and the year-end total assets into fair value of investment properties (*FVIP_P*) and total assets excluding investment property values (*TA_P*) (e.g., Bandyopadhyay

et al., 2017; Israeli, 2015). *TL_P* is the year-end total liabilities. Following the value-relevance literature, the independent variables are scaled by the number of shares outstanding. *INDEX* represents the annual percentage of property return during the fiscal year based on all assets as determined by the Property Council/IPD Australian property index obtained from MSCI's index database. *GVSCORE* is the factor score based on eight governance characteristics, i.e., board independence (*INDDIR*), independent board members with real estate expertise (*REXP_INDDIR*), audit committee real estate expertise (*REXP_AUD*), audit committee accounting expertise (*ACEXP*), frequency of annual audit committee meetings (*ACTIVITY*), gender diversity (*GENDER*), risk committee (*RISK*) and Big 4 audit firm (*BIG4*), and controls for the strength of monitoring mechanism.

$$PRICE_{it} = \beta_0 + \beta_1 NI\_P_{it} + + \beta_2 FVA\_P_{it} + + \beta_3 TA\_P_{it} + \beta_4\ FVIP\_P_{it} + \beta_5\ TL\_P_{it} + \beta_6\ INDEX_{it} + \beta_7\ GVSCORE_{it} + Year\ fixed\ effects + \varepsilon_{it} \quad (5.4)$$

I include the interaction term $Supl\_DScore \times FVA\_P$ to capture the influence of supplementary disclosures on the value relevance of fair value adjustments to investment properties. To test $H_{5.3}$, the observations are partitioned into two sub-samples: the pre-uncertainty sub-sample of 2018 to 2019 consisting of 102 firm-years, and the uncertainty sub-sample based on 2020 consisting of 51 firm-years. I then estimate model (5.5) separately with the two sub-samples.

$$PRICE_{it} = \beta_0 + \beta_1 NI\_P_{it} + \beta_2 FVA\_P_{it} + \beta_3\ Supl\_DScore_{\ it} + \beta_4\ Supl\_DScore_{\ it} \times FVA\_P_{it} + \beta_5\ TA\_P_{it} + \beta_6\ FVIP\_P_{it} + \beta_7\ TL\_P_{it} + \beta_8\ INDEX_{it} + \beta_9\ GVSCORE_{it} + Year\ fixed\ effects + \varepsilon_{it} \quad (5.5)$$

The variable of interest is the coefficient on the interaction term, $Supl\_DScore \times FVA\_P$. If supplementary disclosures enhance the perceived

informativeness of fair value adjustments during 2020, I expect that the coefficient β_4 would be significant and positive for the 2020 sub-sample.

5.5 Empirical Results

5.5.1 Descriptive statistics

Table 5.5 presents the descriptive statistics and univariate comparisons of firm-years reporting in 2020 (*MU2020*=1) with those reporting in the pre-uncertainty period (*MU2020*=0) across model variables. Panel A shows that the mean *SAIDIN* (*DISC*) score is 0.254 (0.271) for the full sample, which translates to one item (out of four) for each firm-year. The difference in mean values between the pandemic and pre-pandemic periods is -0.123 for *SAIDIN* and -0.130 for *DISC*, and the differences are significant at p<0.01. This supports the hypothesis ($H_{5.1}$) that firms tend to provide more supplementary fair value disclosures during periods of market uncertainty.

The mean audit fee (*AUD_FEE*) is 12.721 and the mean share price (*PRICE*) is AUD 3.103. On average the fair value of investment properties accounts for 70 percent of the total assets (*FVIP%*), which indicates its importance in the balance sheets of real estate firms. The mean debt to asset ratio (*LEV*) is about 30 percent, indicating the highly levered nature of this industry. Further, the mean (median) fair value adjustment to investment properties (*FVA_P*) is AUD 0.069 (0.045), indicating that, on average, the property values have been adjusted upwards during 2018–2020. The mean values of none of the above variables are significantly different between the periods at conventional levels, indicating that firm-years between these two periods are similar in most respects. Nonetheless, I find that, on average, the firm-years of the 2020 sub-sample have a lower return on equity (*ROE*), experienced higher stock return volatility (*VOLAT*), and reported lower earnings (*NI*) and a lower return on assets (*ROA*).

Panel B reports that more than 75 percent of firms are audited by Big 4 auditors (*BIG4*), implying that the Big 4 audit firms dominate the Australian real estate sector. Further, a large proportion, around 51 percent, of the firms are listed as trusts (*REIT*). On average, 14 percent of firm-years reported a loss (*LOSS*); for 10 percent of firm-years, audit firms are in their first two years of engagements (*INITIAL*). 83 percent of firm-years have the June year-end (*YEND*) and 7 percent of the firm-years received the modified audit opinion (*OPINION*).

Figure 5.2 illustrates the composition of the investment property portfolios of Australian real estate firms. The horizontal axis shows the property types, and the vertical axis shows the average of each type measured as a percentage of the total fair value of investment properties over the period 2018–2020. This documents that retail is the largest investment category, comprising 32 percent of the property investments on average, followed by investments in office (20 percent) and industrial (15 percent) assets.

The Pearson correlation matrices in Panel C and Panel D show that the disclosure scores (*SAIDIN* and *DISC*) are positively correlated with the uncertainty period of 2020, providing an initial indication of the increase in supplementary disclosures during COVID pandemic. The disclosure score is positively correlated with firm size, size of the fair value of investment properties, engaging a Big 4 audit firm, board independence, being listed as a trust. Further, the audit fee is negatively correlated with the supplementary disclosure scores, setting initial support for the signalling effect. Consistent with prior studies (Chen et al., 2019; Craswell & Francis, 1999; Simunic, 1980), the audit fee is positively correlated with firm size, number of business segments, number of subsidiaries, and Big 4 audit firm. The audit fee is negatively correlated with real estate firms being trusts. Panel E shows that fair value adjustments to investment properties is positively associated with share prices,

indicating the potential for its value relevance. Overall, the correlations among the test variables are moderate to low. Also, the VIF for each explanatory variable is less than 10, which indicates that multicollinearity does not strongly impact the results.[41]

Table 5.5 about here

Figure 5.2 about here

5.5.2 Regression results

Table 5.6 reports the empirical results of the first hypothesis. The dependent variable is the *SAIDIN* in columns (1) and (2) and the *DISC* in columns (3) and (4). The coefficient on *MU2020* is significantly positive under both disclosure indexes (coefficient on *SAIDIN*=0.131, t-stat=3.468; coefficient on *DISC*=0.137, t-stat =3.480), indicating that during the uncertainty of 2020, on average real estate managers disclosed 0.131 (0.137) higher on the Level 3 fair value of properties than in the pre-pandemic years. The adjusted R^2 is 43.20 percent in column (2) and 44.30 percent in column (4) with an F-value significant at the 0.01 level. Among the control variables, the coefficient on *FVIP%* is significantly positive and *INSTITUTE* is significantly negative across the columns, suggesting that the likelihood of providing supplementary disclosure is higher for firms with larger size fair value of investment properties and lower for firms with more institutional investors.

Table 5.6 about here

Table 5.7 presents the regression results on the second set of hypotheses. The research question investigates whether the audit fees are associated with supplementary disclosures and whether this association is pronounced during the pandemic year. Column (1) shows the baseline model and documents that the audit fee is higher for firms that are larger, have more business segments and engage Big 4

[41] Hair et al. (1995) suggest that a VIF score of 10 or above may suggest the presence of multicollinearity.

audit firms. Although the audit pricing determinants explain a substantial portion of the variation in audit fees, approximately 53.80 percent, it is not as high as (from 70 to 80 percent) captured by the extant literature (e.g., Ettredge et al., 2014; Goncharov et al.,2014; Yao et al., 2019). One possible reason for this could be limiting the sample of this study to real estate firms only and focusing on an unstable pandemic period.

In columns (2) and (4), I find that the audit fee is significantly negatively associated with the level of supplementary disclosures (*SAIDIN*=-1.341, t-stat= -2.350; *DISC*=-1.436, t-stat=-2.445). Assessing the economic significance of the effect of supplementary disclosures on audit fees, I find that a one standard-deviation increase in the *SAIDIN* (*DISC*) score is associated with a decrease of 29 (32)[42] percent in audit fees when other independent variables are held constant. This highlights the importance of supplementary disclosure for audit fees. I then interact the indicator variable *MU2020* with disclosure scores in columns (3) and (5). I find a negative but insignificant moderating role of the *MU2020*. Overall, this indicates that supplementary disclosures mitigate the auditor's concern about the opacity of Level 3 properties, but the uncertain market situation in 2020 had no incremental impact on this association.

Table 5.7 about here

Table 5.8 presents the regression results on the moderating impact of supplementary disclosures on the market pricing of the fair value adjustments. I first report the baseline regression results without inclusion of the supplementary disclosure scores in column (1) for the entire sample. Consistent with Israeli (2015) and Bandyopadhyay et al. (2017), the pricing coefficient for fair value adjustments (*FVA_P*) is positive and significant. Columns (2) and (3) present the results where I

[42] These have been calculated as follows: $e^{0.258\times-1.341}-1$ ($e^{0.269\times-1.436}-1$)

interact the supplementary disclosure measure *SAIDIN* with *FVA_P* for the pre-uncertainty and 2020 sub-samples, respectively. I find that, while the supplementary disclosures have no significant influence on the market pricing of fair value adjustments in the pre-uncertainty sub-sample (*Supl_DScore*×*FVA_P*=3.589; t-stat =0.478), supplementary disclosures enhance the perceived informativeness of fair value adjustments during the pandemic period (*Supl_DScore*×*FVA_P*=15.694; t-stat =2.707). I interpret these results as implying that, in times of uncertainty, supplementary disclosures have the potential to mitigate the investors' faithful representation concerns by limiting some of the information risk associated with Level 3 fair values. This is consistent with $H_{5.3}$ in suggesting that supplementary disclosure has a greater effect on enhancing the pricing of fair value adjustments during uncertainty. The results based on the *DISC* score in columns (3) and (4) provide similar evidence. The *Supl_DScore*×*FVA_P* is positive for both sub-samples, but is significant at p<0.05 for the 2020 sub-sample only (pre-uncertainty sub-sample: coefficient=1.544, t-stat =0.217; 2020 sub-sample: coefficient=16.096; t-stat=2.622). The results for control variables across the models are similar in direction and significance levels. The adjusted R^2 vary from 64.1 percent to 74.9 percent for columns (1)–(5) with an F-value significant at the 0.01 level, which is comparable with the prior value relevance of fair value studies. [43]

Table 5.8 about here

5.5.3 Robustness check: Two-stage regressions

The decision to provide supplementary disclosures may be endogenous (Chung et al., 2017), which can introduce errors into the estimation of the models in this study.

[43] For example, Israeli (2015) reports an adjusted R^2 of 68.6 percent, Robinson et al. (2018) 59.8 percent and Muller et al. (2015) 89.9 percent.

The model includes year fixed effects to control for factors that correlate with the time trend. I also cluster the standard errors by firms to mitigate the effect of correlated residuals at the firm level. I also re-run models (5.1)–(5.3) without controlling for *IP_TYPE*. As presented in Table 5.9, the results for the test variables remain qualitatively similar.

Table 5.9 about here

At this point, I apply Heckman's (1979) two-stage approach to address the endogeneity concern. In the first stage, I estimate a logit regression of the likelihood of providing supplementary disclosures using a modified version of model (5.1).[44] For the instrumental variable, I choose institutional ownership (*INSTITUTE*) because it is negatively and significantly associated with supplementary disclosures but does not affect audit fees directly.[45] From the results of this first stage regression, I calculate an inverse mills ratio (*IMR*) and include this ratio in the second stage regression to control for self-selection bias. A significant value on the coefficient on *IMR* in the second stage would indicate an endogeneity issue. The results in Table 5.10 Panel A shows that the coefficient of *Supl_DScore* remains negative and significant. Panel B reports that the interaction terms between *Supl_DScore* and *FVA_P* remain significantly positive for the 2020 sub-sample. Further, the *IMR* coefficients are not statistically significant. I conclude that the results are consistent with the main results reported above, even after controlling for potential self-selection bias.

Table 5.10 about here

[44] In model (5.1), the dependent variable is a continuous variable capturing the supplementary disclosure score. In the modified version of model (5.1), the dependent variable is an indicator variable that takes 1 if the firm provides supplementary fair value disclosures and 0 otherwise.

[45] To verify the validity of *INSTITUTE* as a good candidate for the instrument variable, I include *INSTITUTE* in audit fee model and find that the regression coefficient of *INSTITUTE* is not statistically significant.

5.5.4 Additional analysis

Analysis of individual supplementary index items

An interesting but relevant question that arises is which specific item from the supplementary disclosure index is negatively associated with the audit fee and moderates the value relevance of fair value adjustments more than the others. Table 5.11 tests each of the four supplementary disclosure items separately. Panel A shows the results of the audit fee model. I find that, among the four items, the disclosure of the name of the independent valuer entity (*INDEPENDENT*) is negative and significant at $p<0.05$ (Columns 2 and 5). The other three items are negative but insignificant. This indicates that the disclosure of the name of the valuer drives the audit fee result for supplementary disclosures.

Panel B shows the results of the value relevance model. I find that the variables *INDEPENDENT*×*FVA_P* (coefficient=12.110; t-stat=3.590) and *INPUT*× *FVA_P* (coefficient=9.114; t-stat=2.004) are positive and significant (Columns 2 and 4). However, when I include all four supplementary disclosure items together in the model in column 5, only one interaction variable, *INDEPENDENT*×*FVA_P,* is positive and significant (coefficient=10.713; t-stat=2.695). This implies that the perceived information quality of fair value adjustments is higher for firms that disclose the name of the external independent valuer entity. The other two supplementary disclosure items, *SENSITIVITY* and *DATE*, have no individual incremental valuation effect on fair value adjustments (Columns 1 and 3).

Taken together, the results suggest that, among the four supplementary items, the disclosure of the name of the independent valuer entity has the most informational value to auditors and investors.

Table 5.11 about here

Impact of 'COVID considerations' disclosure

During the 2020 market uncertainty, RICS issued a statement advising adding a 'material uncertainty clause' to valuation reports to alert users to the market circumstances at the valuation date (RICS, 2020). Hand-collected data shows that while most real estate firms briefly mention the impact of COVID on property valuation (*Brief_COVID*), some discuss significant valuation considerations surrounding COVID uncertainty in detail (*COVID_Consider*). A discussion of the COVID considerations can be beneficial because it maps the movements in property valuation in the short term, explains the interrelations among inputs in the unstable conditions and indicates how the uncertainty is factored into the valuation calculation. However, if real estate firms increase disclosure volume but not the quality of the information, investors may regard them as "cheap talk". In that case, additional disclosure may not have any incremental informational role.

Table 5.12 shows that neither a brief mention of COVID nor providing more details on the COVID considerations for valuation measurements impacts the value relevance of fair value adjustments. The lack of results could be due to the high tendency of the managers of real estate firms to use generic disclosures relating to COVID considerations rather than providing firm-specific information. One plausible reason for generic disclosures could be that the complex nature of fair value-related information renders it difficult for managers to make more specific disclosures. Another reason could be the managers' intention to avoid revealing valuable information to competitors.

Table 5.12 about here

5.6. Conclusion

The supplementary disclosures on Level 3 fair value of investment properties can have informational value for auditors and investors during uncertain times. Based on a sample of Australian real estate firms over the period 2018 to 2020, I examine: (i) the effect of the market uncertainty of 2020 on the supplementary disclosures for Level 3 properties, (ii) the association between these supplementary disclosures and audit fees, and whether this association is moderated by the 2020 uncertainty, and (iii) the influence of supplementary disclosures on investors' valuation of fair value adjustments during 2020.

I provide evidence that supplementary disclosures increased during the market uncertainty of 2020. The disclosure of quantitative sensitivity analysis experienced the largest jump, from 6 percent in 2019 to 51 percent in 2020. I find that audit fees are negatively related to supplementary disclosures, consistent with the notion that additional disclosure reduces the audit risk effect and acts as a signal of more transparent Level 3 fair values. Additional analysis reveals that one disclosure item drove this negative association: the disclosure of independent valuer name, indicating that perceived audit risk is lower when the name of the independent valuer is disclosed. Contrary to expectation, I find no incremental influence of 2020 volatility on the disclosure-audit fee association.

Further, I document that investors' pricing of fair value adjustments increases with the increase in supplementary disclosures during 2020, while during the pre-uncertainty period, the pricing influence of disclosure is not significant. This is consistent with the argument that additional disclosure on Level 3 property reduces faithful representation concerns in a distressed market environment, generating a more prominent valuation implication from investors' perspectives. In additional analysis, I find that only one disclosure item enhanced the value relevance of fair

value adjustments during the 2020 uncertainty: the name of the independent valuer. This implies that investors consider the disclosure of the valuer's name as an additional layer in monitoring over the estimation. The results of this study are robust to controls for the endogeneity of the provision of supplementary disclosures, such as the inclusion of the inverse mills ratio in the regression.

From a public policy perspective, the findings contribute to the debate about the informativeness of expanded fair value disclosures. I show that supplementary fair value disclosures on Level 3 properties during uncertain times can translate into an improvement in the information environment of auditors and investors. Thus, findings in this study support the move toward expanded fair value disclosures, consistent with Chung et al., (2017) and Laux and Leuz (2010).

As is the case with all self-constructed disclosure indices, one limitation of the study is that the content analysis of disclosure involves subjective decisions. The manual coding approach inherently limits the feasible sample size. However, this disadvantage is compensated for by the higher construct validity and precision of the disclosure index. Future research could further study the role of additional disclosure on market liquidity, the properties of analysts' forecasts, and the cost of debt. Surveys, interviews, case studies and automated textual analysis methods that reliably measure certain disclosure attributes for large datasets could shed light on aspects not covered in this study. Also, whereas this study highlights the effect of extreme uncertainty on the audit fees and informativeness of Level 3 property disclosures, little is known about firms' disclosure behaviour when uncertainty reduces as the crisis subsides, and the potential impact of that reduction in uncertainty.

Chapter 5 Tables

Figure 5.1: Fair value adjustments of investment properties (2007-2020)

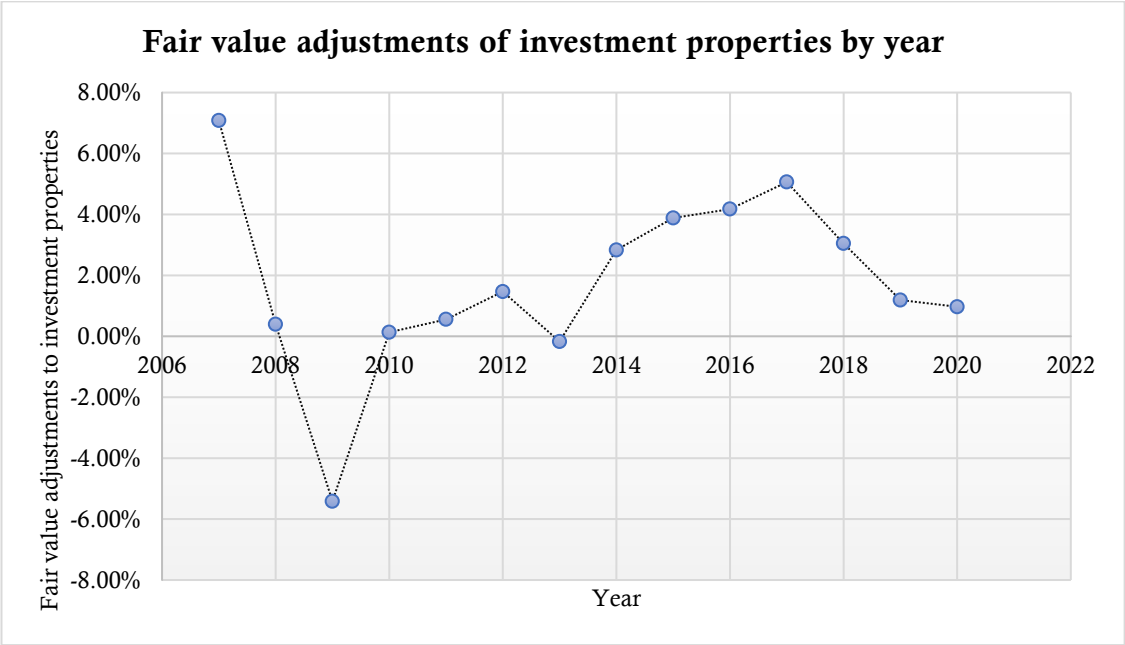


Table 5.1: Sample selection process

	Number of firms		Percentage of firms	
	Less	Remaining	Less (%)	Remaining (%)
ASX listed real estate firms in Thomson Reuters Eikon as of 16 June 2019		78		100%
Excluding the firms:				
That did not adopt the fair value model during the sample period	4	74	5%	95%
With no investment property assets during 2018-2019	20	54	26%	69%
Firms delisted during 2019-2020	3	51	4%	65%
Final sample				
Firms		51		65%
Firm-years (for 2018 to 2020)		153		

Table 5.2: Word count of investment property footnotes

	Year	N	Mean	Median	SD	Min	Max
No. of Words	2018	49	1024.12	837.50	645.00	49	3660
	2019	49	1007.18	884	529.42	158	2808
	2020	49	1209.37	1042	868.15	28	5162

Note: Table 5.2 reports the word-count of the disclosures made under investment property footnote. The sample covers 49 firm-year observations each year out of 51 firm-year observations. The two missing observations each year relates to two real estate firms that did not disclose the investment properties on a separate note.

Table 5.3: Content analysis of disclosure on Level 3 investment properties on footnote

No.	Items		2018	2019	2020
	Panel A: Minimum disclosures on Level 3 fair values – IFRS 13		N=51	N=51	N=51
1	*IFRS 13.93(d)*	A description of the valuation technique(s)	59%	63%	69%
2	*IFRS 13.93(d)*	A description of the inputs used in the fair value measurement (FVM)	49%	49%	53%
3	*IFRS 13.93(d)*	Quantitative information about significant unobservable inputs used in the FVM - Disclose a weighted average/ range of capitalisation rate/ discount rate/ terminal yield (or other unobservable inputs etc.) for all investment properties	84%	84%	84%
4	*IFRS 13.93(e)*	A reconciliation from the opening balances to the closing balances, disclosing changes separately (e.g., gains or losses, purchases, sales, issues and settlements, transfers into or out of Level 3 during the period)	100%	100%	100%
5	*IFRS 13.93(g)*	A description of the valuation processes			
5(a)		- Disclose who is the valuer (e.g., managers or external or both) and at what intervals normally the valuation takes place	80%	80%	80%
5(b)		- Mention of if there is specific authority to oversee the finalisation/process of valuation (e.g., valuation committee, audit committee, board etc.)	8%	8%	8%
5(c)		- Internal tolerance check process	4%	4%	4%
5(d)	*IAS 40.75(e)*	- The extent to which the FVM is based on valuation by the independent valuers (e.g., ratio of independent and director's valuation)	55%	55%	59%
6	*IFRS 13.93(h)(i)*	A narrative description of the sensitivity of the FVM to changes in unobservable inputs	71%	75%	88%
	Panel B: Supplementary disclosures				
7		Quantitative sensitivity analysis of the FVM to changes in unobservable inputs	8%	6%	51%
8		Name of the external valuer company	27%	27%	31%
		The date/time frame at which the Level 3 valuation took place			
9(a)		- Disclose an overall date/time frame of valuation	35%	37%	65%
9(b)		- Disclose valuation date for individual property/property class	37%	37%	41%
10		Disclose the capitalisation rate/discount rate and the terminal yield (or other unobservable inputs etc.) quantitatively for individual investment properties	20%	20%	20%
	Panel C: COVID commentary in 2020				
11(a)		- Mention the COVID-19 impact, with no specific description			69%
11(b)		- A description of the impact of unobservable inputs on FVM due to COVID-19			39%

Note: Table 5.3 reports the content analysis of disclosures on Level 3 investment property measurement. Panel A shows the minimum disclosure items defined by IFRS 13, Panel B shows the disclosures supplementary to the minimum items and Panel C documents the COVID-related disclosures within the investment property footnote. In panel A, regarding item no. 5, IFRS *13.93 (g)* states that an entity must disclose "a description of the valuation processes". The analysis of footnotes reveals that real estate firms in Australia normally disclose four items (i.e., a, b, c, d) while describing the valuation processes. Given that the scope of the term 'description' is broad, I categorise these as the minimum disclosure items, and not supplementary.

Table 5.4: Summary statistics on supplementary disclosure index-all years

Panel A: Components of supplementary disclosure index

Items	N	Disclosed=1	%	Not Disclosed=0
SENSITIVITY	153	33	22%	120
INDEPENDENT	153	44	29%	109
DATE	153	59	39%	94
INPUT	153	30	20%	123

Panel B: Components of supplementary disclosure by year

Year	N	*SENSITIVITY*		*INDEPENDENT*		*DATE*		*INPUT*	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
2018	51	0.08	0.27	0.27	0.45	0.37	0.49	0.20	0.40
2019	51	0.06	0.24	0.27	0.45	0.37	0.49	0.20	0.40
2020	51	0.51	0.50	0.31	0.47	0.41	0.50	0.20	0.40

Panel C: Supplementary disclosure score by year

Year	N	*SAIDIN*				*DISC*			
		Mean	SD	Min	Max	Mean	SD	Min	Max
2018	51	0.22	0.22	0	0.70	0.23	0.24	0	0.75
2019	51	0.21	0.22	0	0.70	0.23	0.24	0	0.75
2020	51	0.34	0.30	0	1.00	0.36	0.31	0	1.00

Table 5.5: Descriptive statistics

Panel A: Continuous variables

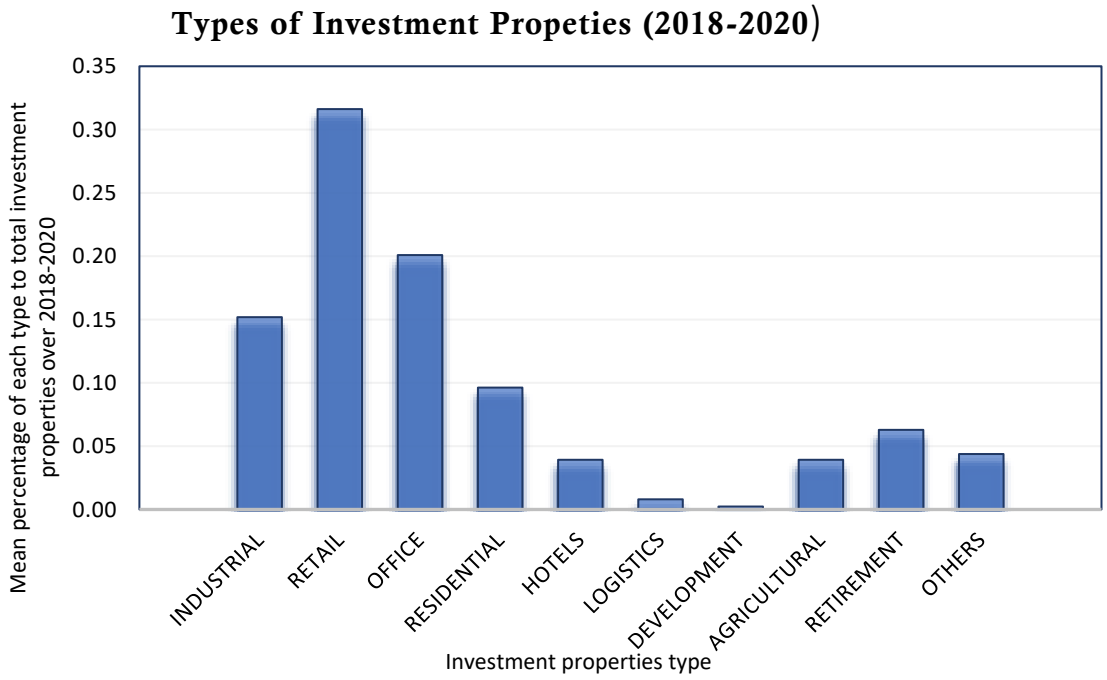
Variables	N	Mean	SD	Percentiles			Mean diff *MU2020*=0-*MU2020*=1	
				25th	50th	75th	diff	t-stat
SAIDIN	153	0.254	0.258	0.000	0.211	0.444	-0.123	-2.584**
DISC	153	0.271	0.269	0.000	0.250	0.500	-0.130	-2.660***
AUD_FEE	153	12.721	1.845	11.740	12.384	13.513	-0.089	-0.304
ROE	153	0.078	0.156	0.049	0.083	0.123	0.091	3.096***
LnTA	153	20.670	1.891	19.603	20.691	21.751	-0.122	-0.374
VOLAT	153	-2.712	0.721	-3.278	-2.877	-2.251	-0.864	-9.636***
LEV	153	0.297	0.155	0.211	0.301	0.375	-0.001	-0.046
FVIP%	153	0.697	0.320	0.519	0.847	0.960	0.032	0.575
BDSIZE	153	1.718	0.335	1.609	1.609	1.946	-0.006	-0.093
INDDIR	153	0.581	0.263	0.500	0.600	0.778	-0.023	-0.535
REXP_AUD	153	0.341	0.245	0.200	0.333	0.500	0.020	0.507
INSTITUTE	153	0.250	0.220	0.004	0.206	0.444	0.029	0.776
LnFVIP	153	19.665	3.897	18.668	20.488	21.473	0.296	0.408
ROA	153	0.053	0.051	0.031	0.053	0.082	0.039	4.829***
MTB	153	1.303	1.341	0.905	1.033	1.213	0.276	1.549
LIQUID	153	2.245	4.785	0.403	1.013	2.037	-0.593	-0.675
SEGMENT	153	1.077	0.466	0.693	0.693	1.386	-0.045	-0.549
LnSUB	153	2.476	1.474	1.386	2.565	3.466	-0.144	-0.575
FOREIGN	153	0.091	0.223	0.000	0.000	0.000	-0.004	-0.094
PRICE	153	3.103	3.408	1.000	2.380	3.720	0.247	0.420
NI_P	153	0.135	0.382	0.002	0.105	0.195	0.128	2.098**
FVA_P	153	0.069	0.171	0.000	0.045	0.123	0.063	2.135
FVIP_P	153	3.872	6.268	0.876	2.905	4.113	1.388	1.698*
TA_P	153	1.482	3.859	0.120	0.351	1.093	0.004	0.007
TL_P	153	2.159	3.786	0.710	1.312	2.024	0.541	0.967
INDEX	153	0.061	0.042	0.003	0.076	0.103	0.087	64.394***
GVSCORE	153	0.000	0.890	-0.691	0.156	0.685	-0.069	-0.463

Note: All continuous variables are winsorised at the 1 percent and the 99 percent levels.

Panel B: Dichotomous variables

Variables	Yes=1		No=0	
	n	%	n	%
MU2020	51	33%	102	67%
BIG4	117	76%	36	24%
REIT	78	51%	75	49%
LOSS	22	14%	131	86%
INITIAL	16	10%	137	90%
YEND	127	83%	26	17%
OPINION	11	7%	142	93%

Figure 5.2: Composition of investment property portfolios



Panel C: Pearson correlation – Test variables for impact of market uncertainty of 2020 on the level of supplementary fair value disclosures

Variables	*(1)*	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*	*(10)*	*(11)*	*(12)*	*(13)*
(1) SAIDIN	1												
(2) DISC	0.99*	1											
(3) MU2020	0.23*	0.23*	1										
(4) ROE	0.01	0.02	-0.28*	1									
(5) VOLAT	-0.03	-0.03	0.57*	-0.38*	1								
(6) LEV	0.02	0.02	0.00	-0.26*	0.23*	1							
(7) FVIP%	0.52*	0.52*	-0.05	0.20*	-0.23*	0.17*	1						
(8) BIG4	0.24*	0.26*	0.06	0.16	-0.18*	-0.08	0.21*	1					
(9) BDSIZE	0.12	0.12	0.01	-0.01	-0.12	-0.08	0.05	0.33*	1				
(10) INDDIR	0.28*	0.27*	0.04	0.11	0.04	-0.13	0.17*	0.25*	0.26*	1			
(11) REXP_AUD	0.05	0.06	-0.04	0.15	-0.07	-0.18*	0.00	0.23*	0.07	0.20*	1		
(12) INSTITUTE	-0.01	0.00	-0.06	0.14	-0.23*	-0.10	0.16*	0.43*	0.37*	0.23*	0.26*	1	
(13) REIT	0.33*	0.33*	0.00	0.14	-0.19*	0.19*	0.46*	0.29*	0.05	0.03	-0.05	0.02	1
VIF			2.12	1.50	2.17	1.79	2.22	2.05	1.91	2.13	1.43	1.83	1.98

Panel D: Pearson correlation – Audit fee model

Variables	*(1)*	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*	*(10)*	*(11)*	*(12)*	*(13)*	*(14)*	*(15)*	*(16)*	*(17)*	*(18)*	*(19)*	*(20)*
(1) AUD_FEE	1																			
(2) SAIDIN	-0.11	1																		
(3) DISC	-0.11	0.99*	1																	
(4) MU2020	0.02	0.23*	0.23*	1																
(5) LnFVIP	-0.17*	0.52*	0.52*	-0.05	1															
(6) ROA	0.12	0.01	0.01	-0.37*	0.23*	1														
(7) LnTA	0.55*	0.24*	0.26*	0.03	0.17*	0.32*	1													
(8) LEV	-0.14	0.02	0.02	0.01	0.17*	-0.28*	-0.17*	1												
(9) MTB	0.06	0.06	0.04	-0.10	0.07	0.24*	0.07	0.01	1											
(10) LIQUID	-0.06	-0.15	-0.15	0.06	-0.35*	-0.16*	-0.22*	-0.34*	-0.05	1										
(11) SEG_BUS	0.36*	-0.29*	-0.28*	0.04	-0.35*	-0.01	0.14	-0.33*	-0.10	0.26*	1									
(12) LnSUB	0.39*	-0.13	-0.13	0.05	-0.26*	0.07	0.21*	-0.10	-0.05	0.13	0.21*	1								
(13) FOREIGN	0.23*	-0.03	-0.03	0.01	-0.24*	-0.03	0.26*	0.00	-0.03	0.03	-0.00	0.34*	1							
(14) LOSS	-0.00	-0.00	0.00	0.18*	-0.13	-0.52*	-0.13	0.34*	-0.13	0.06	0.01	0.02	0.14	1						
(15) BIG4	0.43*	0.24*	0.26*	0.06	0.21*	0.19*	0.58*	-0.08	0.10	-0.07	0.04	0.04	-0.09	-0.12	1					
(16) INITIAL	-0.01	-0.02	-0.01	0.08	0.00	0.06	-0.06	0.04	-0.01	-0.03	0.01	0.05	0.03	-0.02	0.09	1				
(17) YEND	-0.05	0.03	0.02	0.02	0.02	0.03	-0.00	-0.17*	0.12	0.03	-0.05	0.04	-0.30*	-0.21*	0.08	0.04	1			
(18) OPINION	-0.15	-0.13	-0.12	0.07	0.05	-0.24*	-0.32*	0.28*	-0.15	-0.09	-0.19*	-0.17*	0.04	0.25*	-0.26*	0.15	-0.14	1		
(19) INDDIR	0.24*	0.28*	0.27*	0.04	0.17*	0.23*	0.46*	-0.13	0.07	-0.02	0.10	0.07	0.08	-0.07	0.25*	-0.12	0.08	-0.06	1	
(20) REIT	-0.19*	0.33*	0.33*	0.00	0.46*	0.09	0.23*	0.19*	0.04	-0.21*	-0.31*	-0.44*	-0.22*	-0.08	0.29*	-0.01	0.15	-0.08	0.03	1
VIF		2.10	2.14	1.99	5.30	2.64	5.40	2.55	1.27	1.81	2.35	2.09	2.34	1.70	2.38	1.28	1.84	1.62	2.16	1.51

Panel E: Pearson correlation – Value relevance model

Variables	*(1)*	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*	*(10)*
(1) PRICE	1									
(2) NI_P	0.46*	1								
(3) FVA_P	0.25*	0.20*	1							
(4) FVIP_P	0.09	0.33*	0.16*	1						
(5) TA_P	0.72*	0.31*	0.05	-0.02	1					
(6) TL_P	0.41*	0.28*	0.05	0.66*	0.60*	1				
(7) INDEX	0.02	0.15	0.20*	0.10	0.00	0.07	1			
(8) GVSCORE	0.35*	0.31*	0.12	0.33*	0.12	0.20*	-0.04	1		
(9) SAIDIN	0.00	-0.12	0.07	0.19*	-0.21*	-0.02	-0.21*	0.26*	1	
(10) DISC	0.01	-0.10	0.05	0.18*	-0.21*	-0.02	-0.22*	0.27*	0.99*	1
VIF		1.52	1.14	5.07	4.16	6.63	1.21	1.35	1.28	1.28

Note: * represents significance level at <0.05. Variables are defined in Appendix A.

Table 5.6: Effect of market uncertainty of 2020 on the level of supplementary fair value disclosures

DEP= *Supl_DScore*	Pred.	*SAIDIN* (*t-stat*)		*DISC* (*t-stat*)	
		(1)	(2)	(3)	(4)
Intercept		-0.260	-0.260	-0.249	-0.249
		(-0.695)	(-0.695)	(-0.641)	(-0.641)
MU2020	+		0.131***		0.137***
			(3.468)		(3.480)
ROE		-0.148	-0.148	-0.153	-0.153
		(-1.121)	(-1.121)	(-1.127)	(-1.127)
LnTA		0.007	0.007	0.008	0.008
		(0.261)	(0.261)	(0.291)	(0.291)
VOLAT		-0.030	-0.030	-0.027	-0.027
		(-1.091)	(-1.091)	(-0.936)	(-0.936)
LEV		-0.153	-0.153	-0.152	-0.152
		(-1.218)	(-1.218)	(-1.201)	(-1.201)
FVIP%		0.349***	0.349***	0.365***	0.365***
		(4.633)	(4.633)	(4.823)	(4.823)
BIG4		0.076	0.076	0.096	0.096
		(0.850)	(0.850)	(1.038)	(1.038)
BDSIZE		-0.013	-0.013	-0.031	-0.031
		(-0.157)	(-0.157)	(-0.360)	(-0.360)
INDDIR		0.110	0.110	0.075	0.075
		(0.788)	(0.788)	(0.514)	(0.514)
REXP_AUD		0.009	0.009	0.023	0.023
		(0.086)	(0.086)	(0.208)	(0.208)
INSTITUTE		-0.285**	-0.285**	-0.294**	-0.294**
		(-2.312)	(-2.312)	(-2.255)	(-2.255)
INDUSTRIAL		0.073	0.073	0.077	0.077
		(0.911)	(0.911)	(0.916)	(0.916)
RETAIL		-0.022	-0.022	-0.010	-0.010
		(-0.311)	(-0.311)	(-0.137)	(-0.137)
OFFICE		0.013	0.013	0.041	0.041
		(0.126)	(0.126)	(0.409)	(0.409)
RESIDENTIAL		-0.047	-0.047	-0.057	-0.057
		(-0.663)	(-0.663)	(-0.741)	(-0.741)
HOTEL		0.228**	0.228**	0.241**	0.241**
		(2.674)	(2.674)	(2.523)	(2.523)
LOGISTIC		1.509***	1.509***	1.657***	1.657***
		(4.281)	(4.281)	(4.856)	(4.856)
DEVELOPMENT		-1.493	-1.493	-1.226	-1.226
		(-1.315)	(-1.315)	(-1.022)	(-1.022)
AGRICULTURAL		-0.100	-0.100	-0.105	-0.105
		(-0.700)	(-0.700)	(-0.745)	(-0.745)
RETIREMENT		-0.041	-0.041	-0.052	-0.052
		(-0.486)	(-0.486)	(-0.616)	(-0.616)
OTHERS		-0.169*	-0.169*	-0.174*	-0.174*
		(-1.772)	(-1.772)	(-1.763)	(-1.763)
REIT		0.037	0.037	0.031	0.031
		(0.645)	(0.645)	(0.526)	(0.526)
Year fixed effects		Yes	Yes	Yes	Yes
N		153	153	153	153
Adjusted R^2		0.432	0.432	0.443	0.443
F-stat		33.31	33.31	21.93	21.93

Note: Table 5.6 reports the regression results of the effect of the market uncertainty of 2020 on the level of supplementary fair value disclosures. Columns (1) and (2) reflect the *SAIDIN* score and Columns (3) and (4) reflect the *DISC* score. *, ** and *** represent significance levels of 0.10, 0.05 and 0.01, respectively (two-tailed). Standard errors are adjusted for heteroskedasticity. Variables are defined in Appendix A.

Table 5.7: Association between audit fees and the level of supplementary fair value disclosures

DEP=*AUD_FEE*	Pred.	Base *(t-stat)*	*SAIDIN (t-stat)*		*DISC (t-stat)*	
		(1)	(2)	(3)	(4)	(5)
Intercept		3.075	3.350	3.344	3.472	3.456
		(1.557)	(1.628)	(1.624)	(1.664)	(1.657)
Supl_DScore	-		-1.341**	-1.285**	-1.436**	-1.351**
			(-2.350)	(-2.017)	(-2.445)	(-2.157)
MU2020				0.245		0.291
				(0.658)		(0.761)
MU2020×Supl_DScore				-0.113		-0.184
				(-0.324)		(-0.543)
LnFVIP			-0.052	-0.052	-0.050	-0.048
			(-1.502)	(-1.439)	(-1.438)	(-1.349)
ROA		0.631	0.276	0.257	0.357	0.330
		(0.223)	(0.101)	(0.094)	(0.131)	(0.121)
LnTA		0.351**	0.378**	0.377**	0.373**	0.372**
		(2.170)	(2.272)	(2.256)	(2.233)	(2.219)
LEV		-0.390	-0.662	-0.662	-0.682	-0.683
		(-0.249)	(-0.433)	(-0.431)	(-0.448)	(-0.447)
MTB		0.033	0.031	0.030	0.023	0.022
		(0.628)	(0.604)	(0.591)	(0.454)	(0.437)
LIQUIDITY		-0.040	-0.046*	-0.046*	-0.046*	-0.046*
		(-1.433)	(-1.810)	(-1.805)	(-1.827)	(-1.809)
SEGMENT		1.204***	0.936**	0.936**	0.910**	0.909**
		(2.978)	(2.437)	(2.423)	(2.367)	(2.354)
LnSUB		0.103	0.067	0.067	0.060	0.060
		(1.148)	(0.863)	(0.862)	(0.782)	(0.785)
FOREIGN		0.813	1.177	1.169	1.213	1.199
		(1.224)	(1.639)	(1.620)	(1.663)	(1.639)
LOSS		-0.111	-0.088	-0.087	-0.071	-0.068
		(-0.455)	(-0.356)	(-0.350)	(-0.285)	(-0.273)
BIG4		1.271*	1.459*	1.461*	1.502*	1.504*
		(1.730)	(1.858)	(1.853)	(1.895)	(1.892)
INITIAL		0.057	0.113	0.112	0.116	0.114
		(0.118)	(0.242)	(0.239)	(0.251)	(0.246)
YEND		0.343	0.257	0.257	0.248	0.249
		(0.967)	(0.776)	(0.775)	(0.759)	(0.761)
OPINION		0.740	0.463	0.463	0.446	0.446
		(1.512)	(0.951)	(0.944)	(0.928)	(0.919)
INDDIR		0.608	0.813	0.812	0.791	0.790
		(1.117)	(1.409)	(1.397)	(1.386)	(1.379)
INDUSTRIAL		-0.630	0.284	0.276	0.314	0.297
		(-0.854)	(0.335)	(0.323)	(0.371)	(0.348)
RETAIL		-0.625	0.094	0.085	0.098	0.080
		(-0.764)	(0.107)	(0.097)	(0.112)	(0.090)
OFFICE		-1.237	-0.330	-0.338	-0.284	-0.302
		(-1.668)	(-0.386)	(-0.393)	(-0.331)	(-0.351)
RESIDENTIAL		0.956	1.635	1.627	1.621	1.605

	(0.900)	(1.517)	(1.511)	(1.512)	(1.501)
HOTEL	-1.118	-0.086	-0.098	-0.059	-0.085
	(-1.627)	(-0.109)	(-0.124)	(-0.074)	(-0.106)
LOGISTIC	-1.392	2.667	2.636	3.139	3.087
	(-0.713)	(0.923)	(0.905)	(1.042)	(1.022)
DEVELOPMENT	1.697	-7.250	-7.076	-8.016	-7.749
	(0.231)	(-1.097)	(-1.042)	(-1.194)	(-1.128)
AGRICULTURAL	-2.869***	-2.405**	-2.412**	-2.443**	-2.460**
	(-2.985)	(-2.404)	(-2.390)	(-2.406)	(-2.400)
RETIREMENT	-0.804	-0.087	-0.095	-0.109	-0.124
	(-0.905)	(-0.107)	(-0.116)	(-0.134)	(-0.152)
OTHERS	-1.033	-0.448	-0.461	-0.465	-0.493
	(-1.387)	(-0.576)	(-0.586)	(-0.598)	(-0.631)
REIT	-0.353	-0.234	-0.237	-0.240	-0.245
	(-1.420)	(-0.995)	(-1.004)	(-1.020)	(-1.037)
Year fixed effects	Yes	Yes	Yes	Yes	Yes
N	153	153	153	153	153
Adjusted R^2	0.538	0.557	0.554	0.562	0.558
F-stat	30.49	47.35	45.29	47.20	44.85

Note: Table 5.7 reports the regression results on the association between audit fees and supplementary disclosures. Column (1) presents the base audit fee model; columns (2-3) include the disclosure score based on *SAIDIN*; and columns (4-5) include unweighted *DISC* score. *, ** and *** represent significance levels of 0.10, 0.05 and 0.01, respectively (two-tailed). Standard errors are adjusted for heteroskedasticity. Variables are defined in Appendix A.

Table 5.8: Influence of supplementary disclosures on the market valuation of fair value adjustments amid market uncertainty of 2020

DEP= *PRICE*	Pred.	Full Sample	*SAIDIN*		*DISC*	
			Pre *(t-stat)*	2020 *(t-stat)*	Pre *(t-stat)*	2020 *(t-stat)*
Intercept		1.917***	2.957**	0.525	2.938**	0.488
		(6.042)	(2.214)	(1.099)	(2.195)	(1.008)
NI_P		1.351**	0.781	6.703***	0.733	6.546***
		(2.557)	(1.105)	(4.388)	(1.041)	(4.325)
FVA_P		3.230***	2.898	-4.056	3.291*	-4.830
		(3.118)	(1.562)	(-1.126)	(1.834)	(-1.214)
Supl_DScore			1.470	0.500	1.532	0.740
			(1.270)	(0.404)	(1.421)	(0.594)
Supl_DScore ×FVA_P	+		3.589	15.694***	1.544	16.096**
			(0.478)	(2.707)	(0.217)	(2.622)
FVIP_P		0.059	0.032	0.215	0.030	0.209
		(0.996)	(0.501)	(0.830)	(0.479)	(0.796)
TA_P		0.681***	0.634***	0.868***	0.634***	0.891***
		(7.819)	(6.846)	(2.902)	(6.867)	(3.011)
TL_P		-0.190*	-0.129	-0.119	-0.129	-0.145
		(-1.686)	(-1.147)	(-0.260)	(-1.151)	(-0.318)
INDEX		-2.283	-14.678		-14.633	
		(-0.542)	(-1.002)		(-0.999)	
GVSCORE		0.759***	0.760***	0.041	0.761***	0.015
		(3.647)	(3.052)	(0.117)	(3.056)	(0.043)
Year fixed effects		Yes	Yes	Yes	Yes	Yes
N		153	102	51	102	51
Adjusted R^2		0.641	0.673	0.749	0.673	0.748
F-stat		34.88	24.14	19.62	24.08	19.60

Note: Table 5.8 reports regression results on the moderating impact of supplementary disclosures on the market pricing of the fair value adjustments pre-uncertainty versus during market uncertainty of 2020. *, ** and *** represent significance levels of 0.10, 0.05 and 0.01, respectively (two-tailed). Standard errors are adjusted for heteroskedasticity. Variables are defined in Appendix A.

Table 5.9: Results excluding the *IP_TYPE*

Panel A: Effect of market uncertainty of 2020 on the level of supplementary fair value disclosures

DEP=*Supl_DScore*	*SAIDIN* *(t-stat)*		*DISC* *(t-stat)*	
	(1)	(2)	(3)	(4)
Intercept	-0.327	-0.327	-0.378	-0.378
	(-0.982)	(-0.982)	(-1.081)	(-1.081)
MU2020		0.132***		0.138***
		(3.670)		(3.726)
ROE	-0.171	-0.171	-0.183	-0.183
	(-1.398)	(-1.398)	(-1.428)	(-1.428)
LnTA	0.005	0.005	0.009	0.009
	(0.207)	(0.207)	(0.340)	(0.340)
VOLAT	-0.026	-0.026	-0.025	-0.025
	(-1.015)	(-1.015)	(-0.943)	(-0.943)
LEV	-0.095	-0.095	-0.101	-0.101
	(-0.842)	(-0.842)	(-0.863)	(-0.863)
FVIP%	0.365***	0.365***	0.384***	0.384***
	(5.528)	(5.528)	(5.740)	(5.740)
BIG4	0.016	0.016	0.024	0.024
	(0.193)	(0.193)	(0.275)	(0.275)
BDSIZE	0.002	0.002	-0.011	-0.011
	(0.022)	(0.022)	(-0.110)	(-0.110)
INDDIR	0.165	0.165	0.152	0.152
	(1.481)	(1.481)	(1.301)	(1.301)
REXP_AUD	0.025	0.025	0.035	0.035
	(0.267)	(0.267)	(0.361)	(0.361)
REIT	0.059	0.059	0.059	0.059
	(1.030)	(1.030)	(1.006)	(1.006)
Year fixed effects	Yes	Yes	Yes	Yes
N	153	153	153	153
Adjusted R^2	0.342	0.342	0.347	0.347
F-stat	7.870	7.870	8.566	8.566

Panel B: Audit fee model

DEP=*AUD_FEE*	Base *(t-stat)*	SAIDIN *(t-stat)*		DISC *(t-stat)*	
	(1)	(2)	(3)	(4)	(5)
Intercept	2.888	3.152*	3.137*	3.147*	3.125*
	(1.647)	(1.891)	(1.891)	(1.889)	(1.889)
Supl_DScore		-0.982***	-0.920**	-1.028***	-0.962***
		(-3.517)	(-2.577)	(-3.754)	(-2.932)
MU2020			0.075		0.095
			(0.264)		(0.329)
MU2020× Supl_DScore			-0.128		-0.149
			(-0.410)		(-0.492)
LnFVIP		-0.024	-0.023	-0.022	-0.021
		(-0.894)	(-0.865)	(-0.826)	(-0.788)
ROA	-1.163	-1.832	-1.847	-1.828	-1.841
	(-0.443)	(-0.707)	(-0.708)	(-0.717)	(-0.717)
LnTA	0.368***	0.398***	0.397***	0.398***	0.398***
	(3.079)	(3.029)	(3.014)	(3.040)	(3.027)
LEV	0.050	-0.266	-0.265	-0.286	-0.285
	(0.059)	(-0.302)	(-0.299)	(-0.323)	(-0.321)
MTB	0.091*	0.099*	0.098*	0.094*	0.094*
	(1.717)	(1.815)	(1.793)	(1.723)	(1.709)
LIQUIDITY	-0.032	-0.043	-0.042	-0.043	-0.042
	(-1.145)	(-1.527)	(-1.519)	(-1.536)	(-1.525)
SEGMENT	1.010***	0.822**	0.823**	0.810**	0.810**
	(2.777)	(2.232)	(2.224)	(2.218)	(2.211)
LnSUB	0.217**	0.210*	0.210*	0.207*	0.208*
	(2.022)	(1.967)	(1.961)	(1.950)	(1.944)
FOREIGN	0.509	0.462	0.460	0.463	0.459
	(1.249)	(1.386)	(1.376)	(1.403)	(1.390)
LOSS	0.126	0.126	0.127	0.137	0.139
	(0.617)	(0.578)	(0.582)	(0.626)	(0.637)
BIG4	1.277*	1.309*	1.311*	1.323*	1.327*
	(1.848)	(1.901)	(1.895)	(1.926)	(1.920)
INITIAL	-0.253	-0.195	-0.196	-0.188	-0.190
	(-0.628)	(-0.485)	(-0.484)	(-0.472)	(-0.473)
YEND	0.023	-0.055	-0.054	-0.063	-0.063
	(0.071)	(-0.178)	(-0.176)	(-0.205)	(-0.203)
OPINION	0.741	0.533	0.533	0.533	0.534
	(1.449)	(1.108)	(1.099)	(1.119)	(1.109)
INDDIR	-0.275	0.028	0.025	0.033	0.030
	(-0.246)	(0.024)	(0.022)	(0.029)	(0.026)
REIT	-0.725**	-0.613**	-0.616**	-0.608**	-0.611**
	(-2.488)	(-2.237)	(-2.224)	(-2.252)	(-2.241)
Year fixed effects	Yes	Yes	Yes	Yes	Yes
N	153	153	153	153	153
Adjusted R^2	0.466	0.475	0.471	0.477	0.474
F-stat	12.08	15.34	17.18	15.89	18.20

Note: Table 5.9 presents the regression results without controlling for *IP_TYPE* in models (5.1)–(5.3). Standard errors are adjusted for heteroskedasticity. Variables are defined in Appendix A.

Table 5.10: Heckman two-stage regressions controlling for self-selection of disclosure

Panel A: Second stage: Audit fee model

DEP=*AUD_FEE*	(1) *SAIDIN* *(t-stat)*	(2) *DISC* *(t-stat)*
Intercept	2.440	2.620
	(1.144)	(1.229)
Supl_DScore	-1.090*	-1.200**
	(-1.866)	(-2.118)
LnFVIP	-0.003	-0.005
	(-0.048)	(-0.070)
ROA	-0.133	-0.035
	(-0.042)	(-0.011)
LnTA	0.389***	0.384***
	(3.182)	(3.150)
LEV	-0.639	-0.659
	(-0.626)	(-0.648)
MTB	0.031	0.025
	(0.376)	(0.296)
LIQUIDITY	-0.050*	-0.050*
	(-1.802)	(-1.799)
SEGMENT	0.994***	0.965***
	(3.018)	(2.942)
LnSUB	0.066	0.060
	(0.678)	(0.616)
FOREIGN	1.078	1.118
	(1.575)	(1.638)
LOSS	-0.079	-0.065
	(-0.215)	(-0.178)
BIG4	1.409***	1.450***
	(3.904)	(4.007)
INITIAL	0.029	0.038
	(0.078)	(0.103)
YEND	0.224	0.220
	(0.625)	(0.615)
OPINION	0.649	0.618
	(1.287)	(1.231)
INDDIR	0.640	0.636
	(1.124)	(1.128)
IMR	0.146	0.134
	(1.416)	(1.304)
IP_TYPE	Yes	Yes
Year fixed effects	Yes	Yes
N	153	153
Adjusted R^2	0.561	0.564
F-stat	7.470	7.562

Note: Investment property type is controlled (*IP_TYPE*). Standard errors are adjusted for heteroskedasticity. Variables are defined in Appendix A.

Panel B: Second stage: Value relevance model

DEP= *PRICE*	(1) *SAIDIN* *(t-stat)*	(2) *DISC* *(t-stat)*
Intercept	0.571	0.534
	(0.850)	(0.778)
NI_P	6.687***	6.533***
	(4.302)	(4.248)
FVA_P	-4.110	-4.901
	(-1.115)	(-1.197)
Supl_DScore	0.486	0.722
	(0.385)	(0.565)
Supl_DScore ×*FVA_P*	15.814**	16.235**
	(2.640)	(2.545)
FVIP_P	0.206	0.200
	(0.745)	(0.720)
TA_P	0.875***	0.897***
	(2.825)	(2.933)
TL_P	-0.122	-0.147
	(-0.262)	(-0.320)
GVSCORE	0.033	0.007
	(0.089)	(0.018)
IMR	-0.027	-0.026
	(-0.100)	(-0.096)
N	51	51
Adjusted R^2	0.743	0.742
F-stat	17.03	17.01

Note: Table 5.10 reports the results for Heckman two-stage regression. Panel A reports the results for the audit fee model. In the model, investment property type is controlled (*IP_TYPE*) but not tabulated. Panel B shows the results for the value relevance model. *, ** and *** represent significance levels of 0.10, 0.05 and 0.01, respectively (two-tailed). Standard errors are adjusted for heteroskedasticity. Variables are defined in Appendix A.

Table 5.11: Impact of individual items of supplementary disclosure index

Panel A: Association between audit fees and individual supplementary disclosure items

DEP= *AUD_FEE*	(1) *SENSITIVITY* *(t-stat)*	(2) *INDEPENDENT* *(t-stat)*	(3) *DATE* *(t-stat)*	(4) *INPUT* *(t-stat)*	(5) *EXPANDED* *(t-stat)*
Intercept	2.189	3.066	3.407	2.696	3.354
	(1.056)	(1.516)	(1.615)	(1.303)	(1.573)
SENSITIVITY	-0.356				-0.389
	(-0.980)				(-1.068)
INDEPENDENT		-0.737**			-0.700**
		(-2.456)			(-2.214)
DATE			-0.463		-0.310
			(-1.656)		(-1.092)
INPUT				-0.250	-0.039
				(-0.782)	(-0.122)
LnFVIP	-0.059	-0.066	-0.075	-0.072	-0.048
	(-0.965)	(-1.136)	(-1.280)	(-1.221)	(-0.794)
ROA	0.631	0.168	0.707	0.379	0.378
	(0.194)	(0.053)	(0.219)	(0.116)	(0.118)
LnTA	0.425***	0.396***	0.378***	0.402***	0.384***
	(3.418)	(3.255)	(3.024)	(3.221)	(3.069)
LEV	-0.539	-0.638	-0.460	-0.433	-0.776
	(-0.515)	(-0.623)	(-0.445)	(-0.415)	(-0.752)
MTB	0.058	0.038	0.018	0.020	0.048
	(0.653)	(0.451)	(0.206)	(0.224)	(0.523)
LIQUIDITY	-0.046	-0.037	-0.052*	-0.050*	-0.038
	(-1.620)	(-1.325)	(-1.843)	(-1.760)	(-1.327)
SEGMENT	1.133***	1.055***	1.098***	1.156***	0.907***
	(3.512)	(3.360)	(3.445)	(3.604)	(2.759)
LnSUB	0.093	0.054	0.070	0.096	0.041
	(0.939)	(0.554)	(0.709)	(0.971)	(0.409)
FOREIGN	0.886	1.438**	1.093	0.974	1.405*
	(1.272)	(2.044)	(1.584)	(1.407)	(1.980)
LOSS	-0.094	-0.083	-0.152	-0.147	-0.035
	(-0.249)	(-0.225)	(-0.408)	(-0.391)	(-0.094)
BIG4	1.296***	1.422***	1.459***	1.375***	1.472***
	(3.548)	(3.970)	(3.952)	(3.733)	(3.962)
INITIAL	0.095	0.043	0.171	0.108	0.077
	(0.252)	(0.117)	(0.458)	(0.287)	(0.207)
YEND	0.302	0.102	0.243	0.315	0.123
	(0.824)	(0.278)	(0.669)	(0.852)	(0.332)
OPINION	0.730	0.540	0.512	0.621	0.478
	(1.483)	(1.117)	(1.030)	(1.252)	(0.956)
INDDIR	0.734	0.594	0.528	0.727	0.665
	(1.279)	(1.077)	(0.940)	(1.257)	(1.146)
REIT	-0.288	-0.118	-0.371	-0.289	-0.161
	(-0.897)	(-0.366)	(-1.155)	(-0.899)	(-0.489)
IP_TYPE	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
N	153	153	153	153	153
Adjusted R^2	0.540	0.558	0.547	0.539	0.557
F-stat	7.155	7.621	7.319	7.123	6.980

Panel B: Influence of individual supplementary disclosure items on the market valuation of fair value adjustments during 2020

DEP=*PRICE*	(1) *SENSITIVITY* *(t-stat)*	(2) *INDEPENDENT* *(t-stat)*	(3) *DATE* *(t-stat)*	(4) *INPUT* *(t-stat)*	(5) *EXPANDED* *(t-stat)*
Intercept	0.409	0.405	0.696	0.735	0.212
	(0.805)	(0.973)	(1.412)	(1.593)	(0.414)
NI_P	4.219***	4.961***	5.625***	6.748***	5.885***
	(3.387)	(4.521)	(3.644)	(3.862)	(3.530)
FVA_P	4.765	-3.065	1.497	1.605	-1.471
	(0.703)	(-1.169)	(0.531)	(0.676)	(-0.227)
SENSITIVITY	1.239				1.218*
	(1.677)				(1.813)
SENSITIVITY × *FVA_P*	0.554				-1.498
	(0.080)				(-0.231)
INDEPENDENT		0.946			0.952
		(1.606)			(1.566)
INDEPENDENT× *FVA_P*		12.110***			10.713**
		(3.590)			(2.695)
DATE			-0.478		-0.252
			(-0.798)		(-0.459)
DATE×*FVA_P*			6.082		2.027
			(1.431)		(0.391)
INPUT				-0.433	-0.560
				(-0.587)	(-0.818)
INPUT×*FVA_P*				9.114*	1.776
				(2.004)	(0.295)
FVIP_P	0.241	0.355	0.415	0.206	0.113
	(0.875)	(1.581)	(1.615)	(0.745)	(0.389)
TA_P	0.961***	1.272***	0.868***	0.677**	1.065***
	(3.266)	(4.745)	(2.826)	(2.021)	(3.015)
TL_P	-0.325	-0.690*	-0.283	0.080	-0.289
	(-0.696)	(-1.696)	(-0.587)	(0.149)	(-0.534)
GVSCORE	0.124	0.155	0.194	0.273	-0.029
	(0.327)	(0.472)	(0.511)	(0.757)	(-0.079)
N	51	51	51	51	51
Adjusted R^2	0.721	0.780	0.715	0.725	0.772
F-stat	17.12	23.16	16.67	17.47	13.07

Note: Table 5.10 reports the impact of each of the four supplemental disclosure items separately. Panel A reports the results for audit fee model. In the model, investment property type is controlled (*IP_TYPE*) but not tabulated. Panel B shows the results for the value relevance model. *, ** and *** represent significance levels of 0.10, 0.05 and 0.01, respectively (two-tailed). Standard errors are adjusted for heteroskedasticity. Variables are defined in Appendix A.

Table 5.12: COVID-related discussion and market valuation of fair value adjustments

DEP=*PRICE*	(1) *Brief_COVID* *(t-stat)*	(2) *COVID_Consider* *(t-stat)*
Intercept	0.117	0.549
	(0.183)	(1.114)
NI_P	4.016***	3.236**
	(3.128)	(2.433)
FVA_P	4.566	8.750**
	(0.504)	(2.377)
Brief_COVID	1.195	
	(1.428)	
Brief_COVID×FVA_P	0.352	
	(0.038)	
COVID_Consider		-0.340
		(-0.448)
COVID_Consider×FVA_P		-6.676
		(-1.553)
FVIP_P	0.290	0.637**
	(1.068)	(2.260)
TA_P	0.956***	1.192***
	(3.223)	(3.781)
TL_P	-0.334	-0.824
	(-0.711)	(-1.667)
GVSCORE	0.142	0.408
	(0.375)	(1.046)
N	51	51
Adjusted R^2	0.718	0.718
F-stat	16.89	16.92

Note: Table 5.11 reports the impact of COVID consideration disclosures on the value relevance of fair value adjustments. *, ** and *** represent significance levels of 0.10, 0.05 and 0.01, respectively (two-tailed). Standard errors are adjusted for heteroskedasticity. Variables are defined in Appendix A.

CHAPTER SIX:

CONCLUSION

6.1 Research Summary

This thesis documents three separate but related empirical studies on the informativeness of Level 3 fair value adjustments, a topic of much controversy in financial reporting practice. The measurement uncertainty of Level 3 fair value estimates is inherently high as they rely on managerial discretion, use forward-looking assumptions, and are complex to audit (Bratten et al., 2013). Since the findings of Song et al. (2010) that Level 3 fair values are decision-useful, but their relative value relevance is lower than Level 1 and Level 2 fair values, researchers have investigated what factors influence investors' valuations. Underlying this is the further question as to whether it is perceived managerial bias or measurement error that drives the discount on Level 3 fair value estimates. Extant studies provide evidence that opportunistic bias might cause the capital market discount for Level 3 estimates (Bagna et al., 2015; Robinson et al., 2018), raising concerns regarding their faithful representation. However, efficient monitoring through, for example, strong corporate governance, Big 4 auditors, and industry specialist auditors, can reduce the information risk and mitigate faithful representation concerns (Siekkinen, 2017; Song et al., 2010). Extending this research stream, this thesis examines the capital market consequences of fair value adjustments to Level 3 investment properties, conditioned on the closeness to borrowing covenant violation, fair value expertise of auditors, and supplementary fair value disclosures.

The analyses are based on a sample of real estate firms, because of the materiality of the fair value of investment properties, the complexity of the

measurement environment (the majority of assets are valued at Level 3), and the reporting of fair value adjustments through net income, which make the fair value adjustments highly important to the capital market participants in the real estate industry. Australia provides a strong setting due to the importance of the real estate sector in the market, a transparent institutional environment, a long history of managerial experience with property revaluations, and access to some of the variables of interest (e.g., audit partner tenure, upward adjustments) not available in other settings such as the US.

The first study examines the influence of concerns relating to borrowing covenant violations on the investors' valuation of fair value adjustments. Considering the highly geared nature of the real estate industry, I posit that investors' concerns about managerial bias in Level 3 fair value estimation is greater for firms approaching a violation of the borrowing covenant. Based on hand-collected borrowing covenant-related information, I divide the sample firms into three sub-samples: (i) firms at high risk of violation, (ii) firms currently in violation, and (iii) firms far from violation. Consistent with the prediction, results indicate that while the fair value adjustments are priced positively, investors incrementally apply a discount when firms are at high risk of violation or are in violation of their borrowing covenant. Investors appear to price fair value adjustments significantly lower among firms with higher secured borrowing and higher long-term borrowing. Given above 80 percent of the borrowing contracts are long-term, I break down long-term borrowing based on whether or not it is secured and find that the valuation discount on fair value adjustments happens only for the firms with higher long-term secured borrowings, whereas for firms with higher long-term unsecured borrowing, investors think fair value adjustments are more informative. These findings are robust across the stock return model, share price model, and alternative measures. Additional analysis reveals that the discount

on fair value adjustments due to concerns about covenant violation is contingent upon the strength of the governance, evidenced by the decremental valuation impact being seen only in the weaker governance sub-sample.

The second study answers the question of whether auditors' fair value expertise impacts investors' perceptions of the reporting quality of fair value adjustments. The ongoing concerns about the insufficiencies in the process of auditing fair values and the recent claims that the engagement of Big 4 auditors may not necessarily imply high-quality fair value disclosures motivate this study. The fair value expertise of auditors is captured in two dimensions: (i) client-specific experience gained through engagement tenure, and (ii) knowledge obtained through industry specialisation, both at audit firm and partner level. Results indicate that the perceived reporting quality of fair value adjustments is higher during the medium tenure (i.e., 5 years to 10 years) of audit firm engagements and after two years of audit partner appointment, relative to the initial years. This is consistent with the 'expertise' notion that investors value auditor experience and familiarity with the firm-specific issues obtained through years of engagement. Findings are robust after addressing self-selection bias, excluding the 2008 GFC period and using alternative measures. Although superior industry-specific knowledge seems critical for auditing Level 3 properties in a real estate setting, I do not find evidence supporting incremental valuation implications for engaging industry experts, either at the firm level (i.e., city market and national market) or at the partner level.

The third study utilises the market uncertainty of 2020 arising due to the COVID pandemic and investigates to what extent supplementary disclosures on Level 3 fair value estimates affect the audit fees and market valuation of fair value adjustments in times of uncertainty. I measure the levels of fair value disclosure by Australian real estate firms during the period 2018–2020 and develop a disclosure

index based on the supplementary disclosures of IFRS 13 Level 3 fair values. Results indicate that managers increased supplementary disclosures during 2020. Content analysis reveals that the additional disclosures primarily relate to the analysis of the sensitivity of fair value measurements, the name of the independent external valuer entity, and the date at which the valuation took place. Using the audit fee model, I document a negative association between audit fees and supplementary disclosures. This implies that additional disclosures reduce the audit risk effect by signalling the higher transparency of the management. Contrary to expectation, I find no incremental signalling effect during the uncertainty of 2020. An interesting additional finding is that, among the four supplemental disclosure items, auditors perceive the disclosure of the independent valuer name most relevant to audit pricing. Results from the price model document that investors' pricing of fair value adjustments increases with the increase in disclosures in the uncertainty period, while in the pre-uncertainty period, the pricing influence is not significant. Additional analysis revealed that one disclosure items accounted for the enhanced value relevance of these disclosures during 2020: the name of the independent valuer.

In sum, findings in these studies suggest that investors positively price the changes in fair value of Level 3 investment properties, indicating their relevance and faithful representation. However, pricing discount arises due to investors' perception of high managerial bias, which can be triggered by contracting incentives, such as closeness to borrowing covenant violation. This asymmetric pricing behaviour is consistent with Robinson et al. (2018) and Bagna et al. (2015), which suggest that the Level 3 discounting observed by prior research (Goh et al., 2015; Song et al., 2010) is not entirely attributable to unintentional measurement errors; managerial bias also explains the differential pricing. The findings that the market recognises the superior reporting quality of fair values when the auditors involved are experienced and hold

greater client-specific knowledge is consistent with the role of high-quality monitors in ensuring less bias in managerial discretion and more credible financial reporting (Kabir & Rahman, 2016; Siekkinen, 2017). Furthermore, the evidence that supplementary disclosures can increase the perceived informativeness of fair value adjustments and signal more transparency in volatile times like COVID pandemic indicates a demand for expanded fair value disclosures to mitigate the faithful representation concerns. Overall, findings in this thesis support the move toward the fair value reporting for non-current assets, which is yet an unresolved question for the FASB. The results also contribute to the ongoing debate on the usefulness of additional disclosures on Level 3 fair value estimates (Chung et al., 2017; Vergauwe & Gaeremynck, 2018; Weiss & Shon, 2017).

6.2 Implications

The findings of the research questions of this thesis provide critical implications for regulators, standard setters, managers and audit committees of real estate firms and other financial statement stakeholders.

The findings of the first research question confirm that the investors at Australian real estate market consider the changes reported in Level 3 fair values as informative, which is consistent with the results reported in prior studies predominantly covering the European sample. The results of the second research question then highlight that concerns about borrowing covenant violations can be crucial considerations in the pricing of fair value estimates, since investors consider the fair values of firms close to violation or in technical default of borrowing covenant to be less trustworthy. This supports the debt covenant hypothesis. The managers of real estate firms should be more careful while reporting changes in property fair values, as investors are aware of such managerial bias and factor that into their

pricing decisions. Results further show that varying degrees of monitoring and flexibility by lending authority due to the distinct nature of borrowing can have a differential impact on the perceived measurement bias. Investors appear to be more concerned about bias for firms with higher secured borrowing and higher long-term borrowing, although, for firms with higher long-term unsecured borrowing, they perceive substantially lower information risk. Implementing a stronger monitoring system can mitigate the faithful representation concerns that are due to closeness to a borrowing covenant violation, as findings show that the discount on fair value adjustments is significant only for the weaker governance sub-sample and not significant in the stronger governance sub-sample.

The findings of the third research question inform the concerns of policymakers and investors on the effective auditing of Level 3 fair value estimates. The finding that the information quality of fair value adjustments increases during the mid-years of audit firm tenure and is not affected significantly beyond long tenure indicate there is some practical value in the 10-year firm tenure restriction imposed by EU regulation. This might prompt the audit committees of real estate firms to rethink the retention of the same audit firm for a longer period, which is important since 28 firms out of 54 in this study show auditors have been retained for more than 10 years. However, a focus on unrealised gains shows that the benefits of audit firm tenure continue to accrue in the longer tenure, suggesting that the EU policy initiative could generate unintended market consequences when concerns about managerial bias are high. Further, there is an ongoing policy debate on mandating the partner's signature in the audit report. The new PCAOB rule requires disclosure of the engagement partner's identity, arguing that it would provide useful information to investors and other users. Supporting this, evidence suggests that disclosure of the auditor signature might facilitate the inference of their industry expertise by capital

market participants and reduce agency costs. Findings suggest that real estate analysts and investors should assess the adequacy of fair value estimates with care (i) during the initial and later years of audit firm engagements; (ii) for newly appointed audit partners; and (iii) when the firm is at high risk of covenant violation. The finding that engaging Big 4 audit firms has no incremental valuation effect supports the argument that investors in the real estate sector in Australia look beyond the mere appointment of Big 4 auditors in judging the information value of Level 3 fair value adjustments and rely on the auditor's client-specific knowledge and expertise obtained over time. Hence, the managers of real estate firms must consider whether or not the services of Big 4 or industry specialist auditors are worth a fee premium (Ireland & Lennox, 2002).

In the wake of COVID in 2020, there were severe concerns from preparers, managers and auditors that the asset valuations estimated during distressed market conditions might be questioned by users later on (CAANZ, 2020, p. 7). ASIC declared that the risk of being found deceptive is minimal if preparers provide sufficient disclosures (CAANZ, 2020). The results in this study suggest that real estate firms considered the potential negative impact of the market uncertainty during the COVID-19 pandemic on the representational faithfulness of fair value adjustments and enhanced fair value disclosures, which mitigated the perceived audit risk and concerns with the faithful representation of fair value adjustments. The results are, therefore, of interest to standard setters, regulators, and other financial reporting stakeholders.

6.3 Limitations and Suggestions for Future Research

Some limitations of this study provide several promising avenues for future research. The issues with the investigation of each research question have been discussed in the empirical chapters.

The first limitation relates to the scope of the studies, which are relatively small and restricted to the Australian real estate sector. The findings may only be valid for the real estate industry and the regulatory environment of Australia. Although this focus limits the generalisability of findings, the results and research design applied to bring confidence that the variables reported as statistically significant are important predictors. Moreover, this single-industry setting minimises cross-industry variation that can affect the pricing of accounting information and the potential alternative effects likely present in other industries having substantial fair value reporting (e.g., regulation in the banking industry).

The second limitation relates to the variable measurements and research designs, in each of the three studies. The first study concentrates on only two of the many possible borrowing covenants, i.e., gearing ratio and coverage ratio, to identify the firms that are at high risk of violation. Other covenants such as the loan to value ratio, the use of which is almost as common as gearing, have been left out of consideration. Further, to separate the firms at high risk of violation, I apply the median of the industry thresholds for gearing and coverage ratio to the entire sample. While I acknowledge that using actual covenant ratio thresholds and proximity to violation of each firm would provide a more accurate division of sub-samples, it is worth noting that limited disclosure on borrowing-covenant related information by the sample real estate firms prevented me from doing that. Future studies may consider exploring more covenants (e.g., loan to value ratio, current ratio) and using firm-specific covenant information to draw more accurate conclusions.

The second study uses auditor engagement tenure and industry specialisation as proxies to measure the reporting quality of fair value adjustments. There is no rule of thumb in the literature regarding the division of tenure into short, medium and long. For example, Johnson et al. (2002) identify short tenure as two to three years and long as nine or more years, whereas Chen et al. (2016) refer to a tenure of less than five years as short and more than 10 years as long. Results can vary significantly based on the way tenure is defined. The second proxy, industry specialisation, is an unobservable construct, indicating the archival measures used in the first study may not fully capture auditors' industry knowledge and experience. Future studies can explore the role of fair value expertise held by other monitors involved in the measurement and certification process of fair values, such as the qualification of the external valuer, the expertise of the internal audit committee, the experience of the specialists employed by the audit firms, and so on.

In the third study, the content analysis of disclosure and the selection of the items to construct a supplementary disclosure index involve subjective decisions. The manual coding approach inherently limits the feasible sample size and the validity of results. However, this drawback is common to every disclosure study. I attempt to overcome this limitation is by ensuring higher construct validity and greater precision for the disclosure index. Future research could study the role of additional disclosure on market liquidity, and analysts' forecast accuracy and cost of debt. Surveys, interviews, case studies and automated textual analysis methods that reliably measure certain disclosure attributes for large datasets could shed light on aspects not covered in this study.

In terms of the third limitation, while the studies carefully address endogeneity concerns by carrying out robustness tests such as the two-stage

regression controlling for self-selection bias, there is a possibility that such concerns are not entirely addressed. Underlying unobservable characteristics cannot be measured directly, which may introduce noise into the tests conducted. Given the research design, potential problems with omitted variables are not of major concern, and estimates adjust for this potential issue.

Finally, this thesis only addresses investors as financial statement users. It would be worthwhile for future research to focus on other stakeholders such as creditors or financial analysts.

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APPENDICES

Appendix A: Variable Definitions and Data Sources

Code	Label	Definition	Source
ACEXP	Audit committee accounting expertise	A dummy variable that is equal to 1 if at least one audit committee member is a professional accountant, and 0 otherwise.	Hand-collected
ACTIVITY	Audit committee meetings	The frequency of audit committee meetings during the fiscal year.	Hand-collected
AUDITOR_TENURE	Auditor tenure	Medium or long audit firm tenure group is coded as 1 comparing with short-tenure group (coded as 0).	Eikon
AUD_FEE	Audit fee	The natural logarithm of audit fees paid by firm *i* in year *t*.	Hand-collected
BDSIZE	Board size	The natural logarithm of the total number of board members.	Hand-collected
BIG 4	Big 4 audit firm	An indicator variable that takes a value of 1 if the auditor is a Big 4 audit firm, and 0 otherwise.	Eikon
Brief_COVID	Brief mention of COVID-19 uncertainty	An indicator variable that equals 1 if firm briefly mentions COVID-19 uncertainty in the investment properties footnote.	Hand-collected
CEODUAL	CEO duality	Dummy variable, 1 if the CEO and chairperson are the same individual, and 0 otherwise.	Hand-collected
CEO_FY	CEO change	Dummy variable, 1 in the first year of CEO change, and 0 otherwise.	Hand-collected
CFO	Operating cash flows	Operating cash flows divided by total assets at *t-1*.	Eikon

C_FVSP	Industry specialist audit firm at the city level based on audit of Level 3 properties	An indicator variable that takes a value of 1 if a real estate firm hires the top ranked audit firm in the city level industry market in terms of share based on the Level 3 investment properties audited for clients, and 0 otherwise.	Hand-collected
CGI	Governance index	An indicator variable that equals 1 if the *GOVSCORE* of the firm is above median *GOVSCORE,* and 0 otherwise.	Eikon & Hand-collected
C_HIGHFEE	Industry specialist audit firm at city level based on audit fee	An indicator variable that takes a value of 1 if a real estate firm hires the top ranked audit firm in the city level industry market in terms of share based on audit fees, and 0 otherwise.	Hand-collected
CLOSE_GEAR	Firms at high risk of violating gearing ratio restriction	An indicator variable that equals 1 if a firm-year's *GEAR* is above industry median *GEAR* (i.e., 50%), and 0 otherwise.	Hand-collected
CLOSE _COV	Firms at high risk of violating interest coverage restriction	An indicator variable that equals 1 if a firm-year's *COVERAGE* is below industry median *COVERAGE* (i.e., 2%), and 0 otherwise.	Hand-collected
COVERAGE	Interest coverage ratio	Annual interest coverage calculated as earnings before interest, taxes, depreciation, amortisation, and fair value adjustments to investment properties divided by interest expense at year *t*.	Eikon
COVID_Consider	Discussion on COVID uncertainty	An indicator variable that equals 1 if firm discusses the impact on unobservable inputs due to COVID-19 uncertainty in the investment properties footnote.	Hand-collected
CURRENT	Level of current borrowing	Calculated as total current borrowings divided by the total assets excluding fair value adjustments to investment properties *at t*.	Hand-collected
DATE	Supplementary disclosure index item	An indicator variable that takes a value of 1 if firm discloses the date of valuation for the individual investment properties/each class of properties, and 0 otherwise.	Hand-collected

DEFAULT	Firms disclosing violation of any borrowing covenant	An indicator variable that equals 1 if a real estate firm reports violation of borrowing covenant during the fiscal year *t*, and 0 otherwise.	Hand-collected
DISC	Disclosure score based on unweighted index	The ratio of the total supplementary items disclosed to the maximum possible supplementary disclosure score for that firm, based on the four disclosure items: *SENSITIVITY, INDEPENDENT, DATE* and *INPUT*.	Hand-collected
FOREIGN	Foreign subsidiaries	The ratio of number of foreign subsidiaries to number of subsidiaries for firm *i* in year *t*.	Osiris, Hand-collected
FT_SHORT	Short audit firm tenure	An indicator variable that takes a value of 1 if the length of auditor–client relationship is less than or equal to 4 years, and 0 otherwise.	Eikon
FT_MEDIUM	Medium audit firm tenure	An indicator variable that takes a value of 1 if the length of auditor–client relationship is more than or equal to 5 years but less than or equal to 10 years, and 0 otherwise.	Eikon
FT_LONG	Long audit firm tenure	An indicator variable that takes a value of 1 if the length of auditor–client relationship is 11 years or longer, and 0 otherwise.	Eikon
FTΔPT	Rotation of audit partner	An indicator variable that takes a value of 1 if there is a rotation of the signing partner with no change in audit firm, and 0 otherwise.	Hand-collected
ΔFTΔPT	Change of audit firm and audit partner	An indicator variable that takes a value of 1 if there is a rotation of both the signing partner and audit firm, and 0 otherwise.	Hand-collected
FTPT	No change of audit firm and audit partner	An indicator variable that takes a value of 1 if neither the signing partner nor the audit firm changes, and 0 otherwise.	Hand-collected
FVA	Fair value adjustments	Fair value adjustments recognised in the end-of-year earnings, deflated by the market value of equity at time *t-1*.	Hand-collected
FVA_P	Fair value adjustments	Fair value adjustments recognised in the end-of-year earnings, deflated by the number of shares outstanding.	Eikon

ΔFVA	Change in fair value adjustments	Annual change in fair value adjustments in year *t* deflated by the market value of equity at time *t-1*.	Hand-collected
FV_GAIN	Unrealised fair value gains	Upward fair value adjustments recognised in the end-of-year earnings, deflated by the market value of equity at time *t-1*.	Hand-collected
FVIP_P	Fair value of investment properties	End-of year fair value of investment properties to investment properties, deflated by the number of shares outstanding.	Hand-collected
FVIP%	Investment property size	The fair value of investment properties scaled by total assets at year *t*.	Hand-collected
GEAR	Debt to asset ratio	Calculated as total borrowings divided by the total assets excluding fair value adjustments to investment properties at year *t*.	Eikon
GEARING	Debt to asset ratio	Calculated as sum of long-term and short-term borrowing at t-1 divided by total assets at *t-1*.	Eikon
GENDER	Gender diversity	The ratio of female board members in the board.	Hand-collected
GVSCORE	Governance score	The governance score based on the principal component factor analysis of eight governance variables: *INDDIR, REXP_INDDIR, REXP_AUD, ACEXP, ACTIVITY, GENDER, RISK* and *BIG4*.	Eikon & Hand-collected
HIGH_GEAR	Firms with above-median gearing	An indicator variable that equals 1 if a firm-year's *GEAR* is above sample median *GEAR*; it equals 0 otherwise.	Eikon
HIGH_SECURED	Firms with above-median secured borrowing	An indicator variable that equals 1 if a firm-year's *SECURED* is above sample median *SECURED*; it equals 0 otherwise.	Hand-collected
HIGH_UNSEC	Firms with above-median unsecured borrowing	An indicator variable that equals 1 if a firm-year's *UNSECURED* is above sample median *UNSECURED*; it equals 0 otherwise.	Hand-collected

HIGH_LONG	Firms with above-median long-term borrowing	An indicator variable that equals 1 if a firm-year's *LONG* is above sample median *LONG*, and 0 otherwise.	Hand-collected
HIGH_CURRENT	Firms with above-median current borrowing	An indicator variable that equals 1 if a firm-year's *CURRENT* is above sample median *CURRENT*, and 0 otherwise.	Hand-collected
HIGH_LONG_SEC	Firms with above-median long-term secured borrowing	An indicator variable that equals 1 if a firm-year's *LONG_SECURED* is above sample median *LONG_SECURED,* and 0 otherwise.	Hand-collected
HIGH_LONG_UNSEC	Firms with above-median long-term unsecured borrowing	An indicator variable that equals 1 if a firm-year's *LONG_UNSECURED* is above sample median *LONG_UNSECURED,* and 0 otherwise.	Hand-collected
INDDIR	Board independence	The ratio of total independent directors to total board directors.	Eikon
INDEPENDENT	Supplementary disclosure index item	An indicator variable that takes a value of 1 if firm discloses the name of the independent external valuer, and 0 otherwise.	Hand-collected
INDEX	Property return index	Annual percentage of property return during the fiscal year based on all assets as determined by the Property Council/IPD Australian property index.	MSCI's index database
INITIAL	Initial years of audit firm engagement	An indicator variable, coded as 1 if the audit engagement is in its first or second year, and 0 otherwise.	Eikon
INPUT	Supplementary disclosure index item	An indicator variable that takes a value of 1 if firm discloses the details of at least one unobservable input (e.g., capitalisation rate, discount rate, terminal yield) for the individual investment properties, and 0 otherwise.	Hand-collected
INSTITUTE	Ownership	Represents total percentage of firms shares held by institutional investors, as indicated by Osiris database.	Osiris

IP_TYPE	Investment property type	Represents the composition of a firm's investment property portfolio at year *t*. It represents 10 variables: (1) *INDUSTRIAL*, (2) *RETAIL*, (3) *OFFICE*, (4) *RESIDENTIAL*, (5) *HOTEL*, (6) *LOGISTICS*, (7) *DEVELOPMENT*, (8) *AGRICUTURAL*, (9) *RETIREMENT*, (10) *OTHERS*. Each variable respectively measures the percentage of total fair value of investment properties invested in each of the following investment property types: industrial, retail, office, residential, hotels, logistics, properties under development, agricultural, retirement living, and others.	Hand-collected
LIQUIDITY	Current ratio	Ratio of current assets to current liabilities at year *t*.	Eikon
LONG	Level of long-term borrowing	Calculated as total long-term borrowings divided by the total assets excluding fair value adjustments to investment properties at year *t*.	Hand-collected
LOSS	Negative earnings	An indicator variable, coded as 1 if a firm report negative net income for fiscal year *t*, and 0 otherwise.	Eikon
LnFVIP	Investment property size	The natural logarithm of the fair value of investment properties at year *t*.	Hand-collected
LnSUB	Subsidiaries	1+ the natural logarithm of the number of subsidiaries at year *t*.	Osiris, Hand-collected
LnTA	Firm size	The natural logarithm of total assets for firm *i* in year *t*.	Eikon
LEV	Debt to asset ratio	Calculated as the sum of long-term and short-term borrowing divided by total assets prior to fair value adjustments at year *t*.	Eikon
LONG_SECURED	Level of long-term secured borrowing	Calculated as total long-term secured borrowings divided by the total assets excluding fair value adjustments to investment properties at year *t*.	Hand-collected
LONG_UNSECURED	Level of long-term unsecured borrowing	Calculated as total long-term unsecured borrowings divided by the total assets excluding fair value adjustments to investment properties at year *t*.	Hand-collected
LOW_COV	Firms with below-median interest coverage	An indicator variable that equals 1 if a firm-year's *COVERAGE* is below sample median *COVERAGE* and 0 otherwise.	Eikon

MTB	Investment opportunities	The ratio between the market value of equity and the book value of equity at *t-1*.	Eikon
MU2020	Market uncertainty of 2020	An indicator variable equal to 1 if the respective observation is from market uncertainty year 2020, and 0 otherwise.	Hand-collected
NI	Earnings	Annual net income before tax and unrealised fair value gains and losses for investment properties in period *t*, deflated by the market value of equity at time *t-1*.	Eikon
ΔNI	Change in earnings	Annual change in earnings before tax and unrealised fair value gains and losses for investment properties in period *t*, deflated by the market value of equity at time *t-1*.	Eikon
NI_P	Earnings	Annual net income before interest, taxes and unrealised fair value gains and losses for investment properties deflated by the number of shares outstanding.	Eikon
N_FVSP	Industry specialist audit firm at national level based on audit of Level 3 properties	An indicator variable that takes a value of 1 if a real estate firm hires the top ranked audit firm in the national industry market in terms of share based on the Level 3 investment properties audited for clients, and 0 otherwise.	Hand-collected
N_ HIGHFEE	Industry specialist audit firm at national level based on audit fee	An indicator variable that takes a value of 1 if a real estate firm hires the top ranked audit firm in the national industry market in terms of share based on audit fees, and 0 otherwise.	Hand-collected
OPINION	Opinion other than unqualified	An indicator variable, coded as 0 if the firm has an unqualified opinion, and 1 otherwise.	Eikon
P_ISP	Industry specialist audit partner	An indicator variable that takes a value of 1 if a signing audit partner signs more than one audit report within the real estate industry in the same year, and 0 otherwise.	Hand-collected
PREGAIN_NI	Pre-fair value adjusted earnings	Earnings before fair value adjustments in period *t* deflated by the market value of equity at time *t-1*.	Hand-collected, Eikon

PRICE	Share price	The closing share price on the announcement date of annual report.	Eikon
PT ≤ 2	Below-median audit partner tenure	An indicator variable that takes a value of 1 if the engagement of signing partner is less than or equal to 2 years, and 0 otherwise.	Hand-collected
PT>2	Above-median audit partner tenure	An indicator variable that takes a value of 1 if the engagement of signing partner is 3 years or longer, and 0 otherwise.	Hand-collected
REIT	Real estate trust	An indicator variable that equals 1 if the real estate firm is listed as a trust, and 0 otherwise.	Hand-collected
RETURN	Stock return	Equity returns of firm i in year *t*, measured from 3 months after the year end for year *t-1* to 3 months after the year-end for year *t*.	Eikon
REXP_INDDIR	Board real estate expertise	The ratio of independent directors with real estate expertise to total directors.	Hand-collected
REXP_AUD	Audit committee real estate expertise	The ratio of audit committee members with real estate expertise to total members in the committee.	Hand-collected
RISK	Risk committee	A dummy variable that is equal to 1 if the firm has appointed a risk committee and 0 otherwise.	Hand-collected
ROA	Return on assets	The ratio of earnings before interest and tax to total assets for firm *i* in year *t*.	Eikon
ROE	Return on equity	Earnings before interest and taxes at t deflated by the average market value of equity.	Eikon
SAIDIN	Disclosure scores based on weighted Saidin index	A disclosure score which weights each disclosure item by the percentage of firms in the sample that do not comply with the item and is based on four supplementary disclosure items: *SENSITIVITY, INDEPENDENT, DATE* and *INPUT*.	Hand-collected
SECURED	Level of secured borrowing	Calculated as total secured borrowings divided by the total assets excluding fair value adjustments to investment properties at year *t*.	Hand-collected

SEGMENT	Business segments	1+ the natural logarithm of the number of business segments at year *t*.	Osiris, Hand-collected
SENSITIVITY	Supplementary disclosure index item	An indicator variable that takes a value of 1 if firm discloses quantitative sensitivity analysis on fair value measurements, and 0 otherwise.	Hand-collected
SIZE	Firm size	Natural logarithm of the market value of common equity at time *t -1*.	Eikon
Supl_DScore	Disclosure scores	Represents disclosure scores calculated based on *SAIDIN* and *DISC.*	Hand-collected
TA_P	Assets	Year-end value of total assets excluding fair value adjustments to investment properties, deflated by the number of shares outstanding.	Eikon
TL_P	Total liabilities	End-of-year total liabilities deflated by the number of shares outstanding.	Eikon
UNSECURED	Level of unsecured borrowing	Calculated as total unsecured borrowings divided by the total assets excluding fair value adjustments to investment properties at year *t*.	Hand-collected
VOLAT	Return volatility	Volatility of returns, calculated as the standard deviation of monthly returns in period *t-1*.	Eikon
YEND	Year-end	A binary variable equal to 1 if firm *i* in year *t* has a 30 June year-end, and 0 otherwise.	Eikon
Year fixed effects	Year fixed effect	Represents year-fixed-effect variables.	

Appendix B: Illustrative Examples of Disclosure Index Items

<table>
<tr><th>No.</th><th>Items</th><th>Illustrative Examples from Annual Reports</th></tr>
<tr><td>1</td><td>Description of valuation technique</td><td>… Capitalisation of income valuation: The capitalisation of income valuation method capitalises the current rent received, at a rate analysed from the most recent transactions of comparable property investments… Valuations reflect, where appropriate, lease term remaining, the relationship of current rent to the market rent, location and prevailing investment market conditions. … (Finbar Group Ltd Annual Report 2020, p. 62)</td></tr>
<tr><td>2</td><td>Description of unobservable inputs</td><td>… Adopted discount rate: The rate of return used to convert a monetary sum, payable or receivable in the future, into present value. Theoretically it should reflect the opportunity cost of capital, that is, the rate of return the capital can earn if put to other uses having similar risk… (GPT Group Annual Report 2020, p. 83)</td></tr>
<tr><td>3 (a)</td><td>A single weighted average rate or range for input</td><td><table><tr><td>Unobservable inputs</td><td>Range</td></tr><tr><td>Capitalisation rate (%)</td><td>2.6 – 13</td></tr><tr><td>Net market rent ($ per sqm)</td><td>116 – 1,043</td></tr></table>(BlackWall Property Trust, Annual Report 2019, p. 16)</td></tr>
<tr><td>3 (b)</td><td>Inputs ranges for each investment property categories</td><td><table><tr><td></td><td>Industrial properties</td><td>Office portfolio</td></tr><tr><td>Discount rate</td><td>6.5%-8.3%</td><td>6.5%-8.0%</td></tr><tr><td>Terminal yield</td><td>5.5%-9.8%</td><td>5.5%-7.5%</td></tr><tr><td>Capitalisation rate</td><td>5.3%-8.4%</td><td>5.0%-7.5%</td></tr><tr><td>Expected vacancy period</td><td>3-18 months</td><td>6-12 months</td></tr><tr><td>Rental growth rate</td><td>2.5%-3.5%</td><td>3.0%-4.5%</td></tr></table>(Growthpoint Properties Australia Ltd Annual Report 2019, p. 68)</td></tr>
</table>

4 Reconciliation statement

	2020 ('000)
Opening balance	668,400
Capitalised borrowing cost	178
Additions	9,021
Lease commissions and incentives amortisation	(4,765)
Straight-lining of rental income	(284)
Revaluation movements	(2,900)
Closing balance	669,650

(Australian Unity Office Fund, Annual Report 2020, p. 26)

5 (a) Intervals at which revaluation takes place

…The use of independent external valuers is on a progressive basis over a three-year period, or earlier, where the Responsible Entity deems it appropriate or believes there may be a material change in the carrying value of the property. For non-development properties, if the external valuation is more than 12 months old then the property is externally valued … (*Charter Hall Retail REIT, Annual Report 2018, p. 40*)

5 (b) Specific authority to oversee the finalisation/process of valuation

…GPT has a Valuation Committee (committee) which is comprised of the Chief Operating Officer, Chief Financial Officer, Head of Funds Management, Head of Transactions, Deputy Chief Financial Officer and General Counsel. The purpose of the committee is to: (i) approve the panel of independent valuers; (ii) review valuation inputs and assumptions; (iii) provide an escalation process where there are differences of opinion from various team members responsible for the valuation; (iv) oversee the finalisation of the valuations; and (v) review the independent valuation sign-off and any comments that have been noted. All independent valuations and internal tolerance checks are reviewed by the committee prior to these being presented to the Board for approval… (*GPT Group Annual Report 2020, p. 84*)

5 (c) Internal tolerance check process

…If the internal tolerance check is within 5.0% of the current book value, then the current book value is retained, and judgement is taken that this remains the fair value of the property under development. If the internal tolerance check varies by more than 5.0% to the current book value (higher or lower), then an internal valuation will be adopted with an external valuation obtained on completion of the development… *(Stockland Corporation Ltd, Annual Report 2019, p. 132)*

5 (d) Ratio of independent and director's valuation

(i) …At balance date the adopted valuations for 22 of Cromwell's investment properties are based on independent external valuations representing 95% of the value of the portfolio… (*Cromwell Property Group, Annual report 2020, p. 95*)

(ii) …For the year ended 30 June 2018, 100% of non-development investment properties were externally valued (2017: 90%) … (*Charter Hall Retail REIT, Annual Report 2018, p. 40*)

6 Qualitative sensitivity analysis discussion

(i)… The estimated fair value would increase (decrease) if: (i) Expected market rental growth were higher (lower); (ii) Void periods were shorter (longer);(iii) Occupancy rate was higher (lower); (iv)Rent-free periods were shorter (longer); or (v) Risk-adjusted discount rate were lower (higher)… *(Finbar Group Ltd Annual Report 2019, p. 66)*

(ii)… The capitalisation rate adopted reflects the inherent risk associated with the property. For example, if the lease expiry profile of a particular property is short, the capitalisation rate is likely to be higher to reflect additional risk to income. The higher capitalisation rate then reduces the valuation of the property… *(National Storage REIT, Annual Report 2020, p. 100)*

Supplementary disclosure items

7 Quantitative sensitive analysis

Investment Properties ($'000)	Fair value at 30 June 2020	Capitalisation rate impact	
		-0.5%	+0.5%
Ingenia Gardens	139,870	7,100	(6,430)
Ingenia Lifestyle & Holidays	804,088	52,147	(45,423)
	943,958	59,247	(51,853)

(Ingenia Communities Group, Annual Report 2020, p. 49)

8 External valuer company name

…This valuation was conducted by Jones Lang LaSalle Advisory Services Pty Ltd in accordance with guidelines set by the International Valuation Standards Council… (*Carindale Property Trust, Annual Report 2019, p. 7*)

9 (a) An overall date/time frame of valuation

(i) … At 30 June 2020, the Group undertook a review of the fair value of all investment properties held and recorded a net revaluation gain of $1.38 million… *(Eureka Group Holdings Ltd, Annual Report 2020, p. 43)*

(ii) …An independent valuation was carried out on the property on 31 March 2020 by CBRE, a specialist in valuing these types of investment properties… *(360 Capital Group Ltd, Annual Report 2020, p. 49)*

9 (b) Valuation date for individual property

Properties	Latest Independent Valuation date	Valuation ($'000)	Carrying Amount ($'000)
34 Australis Drive, Derrimut, VIC	Dec 2019	31,700	31,765
80-96 South Park Drive, Dandenong South, VIC	June 2020	25,900	25,900
89 West Park Drive, Derrimut, VIC	Dec 2019	22,000	22,000

(APN Industria REIT, Annual report 2020, page 50-51)

10 Inputs (rates) for individual investment properties

Property	State	Property Type	Book value cap rate 30 Jun 2019	Book value discount rate 30 Jun 2019	Book value 30 Jun 2019 $m
Lilydale	VIC	Sub-Regional	6.00%	7.00%	116.0
Pakenham	VIC	Sub-Regional	6.25%	7.25%	89.6
Central Highlands	QLD	Sub-Regional	7.50%	7.75%	63.4

(Shopping Centres Australasia Property Group Re Ltd, Annual Report 2019, p. 90-91)

11 (a) Mention of COVID- 19 impact

(i) …The fair value assessment of the Company as at the reporting date includes the best estimate of the impacts of COVID-19 pandemic using information available at the time of preparation of the financial statements and appropriate forward-looking assumptions… *(Finbar Group Ltd Annual Report 2020, p. 64)*

(ii) …In addition to the above, all valuations have considered the impact of COVID-19 including an estimate of rent relief to be provided to tenants under the Commercial Leases Code of Conduct… (*Charter Hall Retail REIT Annual Report 2020, p. 51)*

11 (b) A description of the impact due to COVID

…The key assumptions and estimates used in these valuation approaches which have been impacted by COVID-19 include: (i) forecast future rental income, based on the location, type and quality of the property, which are supported by the terms of any existing leases, other contracts or external evidence such as current market rents for similar properties adjusted to recognise the COVID-19 impact; (ii) lease assumptions based on current and expected future market conditions after expiry of any current lease; (iii) the capitalisation rate and discount rate derived from recent comparable market transactions adjusted for COVID-19 to reflect the uncertainty in the amount and timing of cash flows; (iv) the impact of government support on tenants and rental schemes giving rise to rental deferrals, rental forgiveness, and eviction moratoriums… *(Abacus Property Group, Annual Report 2020, p. 40)*